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ABSTRACT

Data from national Tech-Prep surveys that were completed by more than 800 Tech-Prep consortium coordinators in fall 1993 and/or fall 1994 were analyzed to assess the emergence of Tech-Prep at the state and local levels. It was discovered that, between 1993 and 1994, the number of Tech-Prep consortia nationwide increased from 812 to 953, the percentage of consortia able to identify and count students participating in Tech-Prep increased from 29% to 53%, and the number of students identified as Tech-Prep participants increased by 150%. Tech-Prep students appeared to be achieving intermediate outcomes in greater numbers. An estimated 97% of Tech-Prep seniors graduated from high school in spring 1994 (versus 94% in 1993), and approximately 56% of 1994 Tech-Prep high school graduates entered postsecondary education or training the following fall. Between 1993 and 1994, Tech-Prep consortia continued to lay important groundwork for transformation to school-to-work systems; however, applied academic curricula, articulation agreements, and career development activities were implemented in only a relatively small proportion of consortium districts and schools. Tech-Prep progress on school-to-work features was most evident in reports of increased school-industry collaboration. (Contains 27 tables/figures) (MN)

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THE CONTINUING DEVELOPMENT OF LOCAL TECH-PREP INITIATIVES

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EXECUTIVE SUMMARY

Tech-Prep is an important education reform strategy that has been adopted by consortia of local secondary education agencies and postsecondary instititutions throughout the nation, and is guided and supported by state and federal agencies. This reform model seeks to improve the career preparation; technical knowledge; and mathematics, language, and reasoning skills of American youth by supporting career-oriented programs of study that link secondary and postsecondary education and academic and vocational instruction. Federal legislation has provided substantial funding for development of Tech-Prep programs, and for a national evaluation to document their planning and implementation. This report is one of a series prepared by Mathematica Policy Research, Inc., (MPR) as part of the national evaluation of Tech-Prep for the U.S. Department of Education (ED). The report describes the status of Tech-Prep implementation in 1994 and documents changes in implementation since 1993, on the basis of the first two waves of longitudinal data collected from local Tech-Prep consortia. It builds upon an earlier, more comprehensive report on the status of Tech-Prep development in 1993.

The current report draws on two major data sources. Information on local Tech-Prep implementation came from survey questionnaires--the Inventory of Local Tech-Prep Planning and Implementation--administered to all consortium coordinators in fall 1993 and again in fall 1994. Response rates to these surveys were high, at 86 percent in 1993 and 91 percent in 1994. Some background information for the report--specifically, data on secondary district enrollments--was obtained from data files compiled by ED's National Center for Education Statistics (NCES).

Analysis of the survey data yielded many findings about the development of Tech-Prep nationwide. These findings document the considerable progress Tech-Prep consortia have made in planning and implementing their initiatives, as well as some of the continuing challenges they face. The most salient points are described here.

Tech-Prep expansion has been substantial

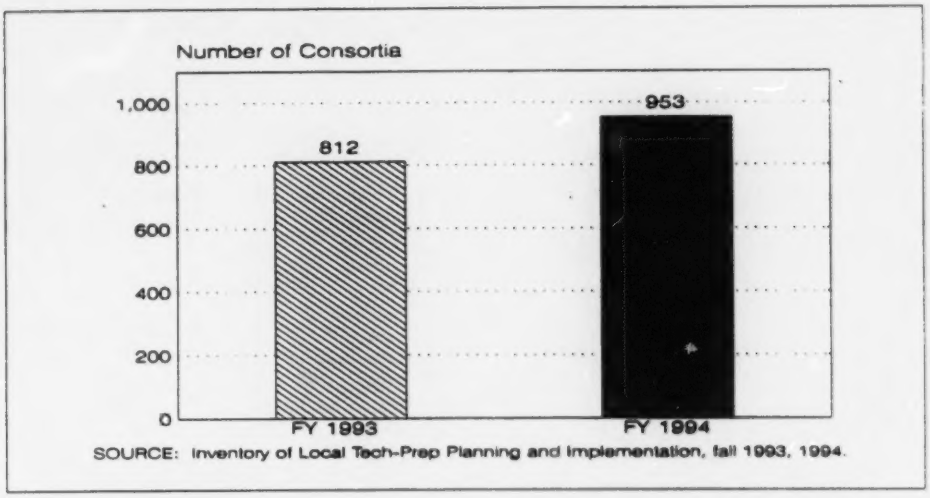
Tech-Prep continues to grow (Figure 1). Almost 140 new consortia were formed and awarded their first Title IIIE grants for fiscal year (FY) 1994, bringing the total number of Tech-Prep consortia to 953 nationwide. The new consortia represented a nearly 20 percent increase over the 812 consortia identified during FY 1993.

The number of educational institutions participating in Tech-Prep consortia also increased between 1993 and 1994, reflecting both the addition of new consortia and the expansion of existing consortia:

- Tech-Prep consortia include a large and growing proportion of U.S. school districts. The 6,594 districts that were members of consortia responding to the survey in 1994 represented 58 percent of the approximately 11,000 secondary school districts in the United States, up from 44 percent in 1993.

FIGURE 1

TOTAL NUMBER OF TECH-PREP CONSORTIA IN FY 1993 AND FY 1994



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994.

- An additional 157 vocational centers, 282 two-year colleges, and 191 four-year colleges and universities (an increase of almost 50 percent) were members of Tech-Prep consortia in 1994 compared to 1993. However, the likelihood that not all consortium members were actively implementing comprehensive Tech-Prep models limits the expansion of Tech-Prep as a wide-reaching reform. Although the national survey data do not allow a detailed assessment of the *quality* of consortium programs and student experiences, it is clear that all consortium members do not participate in Tech-Prep to the same degree.

Reporting on students increased significantly, but it still remains a challenge

Consortia are increasingly able to document the numbers of students participating in Tech-Prep and achieving key outcomes (Figure 2):

- In 1994, 53 percent of consortia were able to identify and count students participating in Tech-Prep, and they could do so in 29 percent of their member districts. In contrast, only 36 percent of consortia and 17 percent of their districts reported counts of participants in 1993.

- Higher proportions of consortia were able in 1994 to document the numbers of Tech-Prep students who graduated from high school, entered a postsecondary program, or took jobs after graduation.

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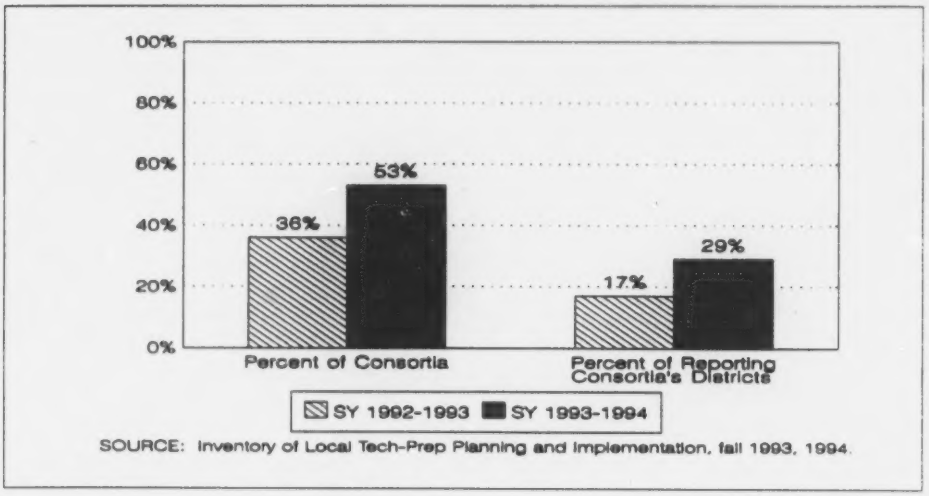
FIGURE 2

PERCENTAGE OF TECH-PREP CONSORTIA AND THEIR DISTRICTS
THAT REPORTED STUDENT PARTICIPATION
IN SY 1992-1993 AND SY 1993-1994



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994.

Despite the trend toward increased reporting of student data, consortia were still facing difficulties in identifying who was a Tech-Prep student and in collecting data on participants' progress. In 1994, almost half of Tech-Prep consortia--and more than 30 percent of those in their third year of funding--could not document how many students were participating in Tech-Prep in any of their member high schools. Moreover, the ability to track outcomes lagged even further behind reports of participation. For example, of the nearly 450 consortia that reported 12th-grade Tech-Prep enrollments, nearly half could not report how many of these students had graduated from high school. Although consortia made significant progress between 1993 and 1994 in reporting participation and outcomes, they still have a long way to go before providing a full accounting of Tech-Prep achievement.

Tech-Prep participants represent a small but growing share of students in their consortium districts

More than 432,000 students were identified as Tech-Prep participants during the 1993-1994 school year. The total represents a significant increase--as high as 150 percent--over the reported level of participation during the previous school year. More consortia reported counts of students, but the average number of participants consortia reported also rose.

Despite the growth in reported participation, Tech-Prep students still represent only a fraction of all high school students:

- Across consortia nationwide that reported participation in 1994, Tech-Prep students represented about seven percent of all secondary students in their member districts. A year

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earlier, Tech-Prep students represented just under five percent of secondary students in reporting consortia's districts.

- Participation in Tech-Prep reforms is still far lower than participation in vocational education programs. Tech-Prep currently reaches fewer than one-quarter of the number of vocational students (7 percent versus close to 30 percent of high school students who are considered vocational students, according to the National Assessment of Vocational Education 1994).

Tech-Prep students appear to be achieving intermediate outcomes in greater numbers

In 1994, consortia reported substantially higher numbers of Tech-Prep students graduating from high school and enrolling in postsecondary education or training than in the previous year. According to the relatively few consortia that could document Tech-Prep student outcomes:

- An estimated 97 percent of Tech-Prep seniors graduated from high school in spring 1994.[1] This rate is based on data provided by the 238 consortia that reported counts of both Tech-Prep seniors and Tech-Prep high school graduates in 1994. These consortia reported that 43,000 Tech-Prep students graduated in spring 1994, compared with close to 12,000 graduates reported by 94 consortia the previous year.

- Approximately 56 percent of Tech-Prep high school graduates in spring 1994 entered postsecondary education or training the following fall, according to the 150 consortia that reported on this outcome. A year earlier, fewer than half the documented Tech-Prep graduates enrolled in postsecondary activities, as reported by the 62 consortia that tracked students' postsecondary activities.

These reported increases in graduates and postsecondary enrollments reflect several factors. Larger numbers of students were undoubtedly moving through Tech-Prep programs as consortia became more established and expanded their operational capacity. However, some portion of the reported increase is due solely to consortia's improved ability to track student progress. Thus, computed growth rates are likely to overestimate the true increase in these outcomes.

Tech-Prep consortia made progress toward implementing a school-to-work model

Tech-Prep programs continued to lay important groundwork for their transformation to school-to-work systems. Between 1993 and 1994, Tech-Prep consortia expanded implementation of key school-to-work elements, perhaps as a result of the stimulus provided by anticipated federal funding available under the School-to-Work Opportunities Act (STWOA) passed in May 1994.

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[1]The actual computed rate was 75 percent, but this estimate reflects reporting bias; some schools reported their number of seniors but not their number of graduates. Adjusting for reporting bias results in an estimate of 97 percent for the proportion of Tech-Prep seniors who graduated from high school.

Many proponents of Tech-Prep believe that it is the natural model for the school-based components of school-to-work initiatives. The STWOA builds on some Tech-Prep concepts, emphasizing several educational strategies that were specified earlier in and promoted by the Tech-Prep Education Act. Thus, it is not surprising that many Tech-Prep consortia report implementing the school-based features of the STWOA:

- Consortia are moving towards organizing Tech-Prep courses and activities around occupational clusters. About two-thirds of consortia in both years (470 in 1993 and 574 in 1994) reported the availability of occupationally focused programs of study or career clusters in at least one of their consortium districts. In 1994, more than half of these consortia said the choice of a broad career cluster was a standard step in their consortiumwide core Tech-Prep program.

- About 92 percent of consortia recently introduced applied academic curricula, developed by state agencies or local school staff, or purchased from commercial vendors.

- Almost all consortia have developed articulation agreements among member districts and community colleges.

- Most consortia make available some types of career development activities for the Tech-Prep and/or the general student population.

There is currently little evidence of comprehensive or consistent implementation of these key school-based components, however. Applied academic curricula, articulation agreements, and career development activities have been implemented in a relatively small proportion of consortium districts and schools. Moreover, much of the articulation effort in Tech-Prep consortia continues to emphasize linking individual secondary vocational courses with similar courses at the postsecondary level, rather than developing secondary-postsecondary course sequences that represent career clusters, as was encouraged by the Tech-Prep Education Act.

Tech-Prep progress on school-to-work features is probably most evident in reports of schools' increased collaboration with business and industry and the availability of workplace experiences for Tech-Prep students:

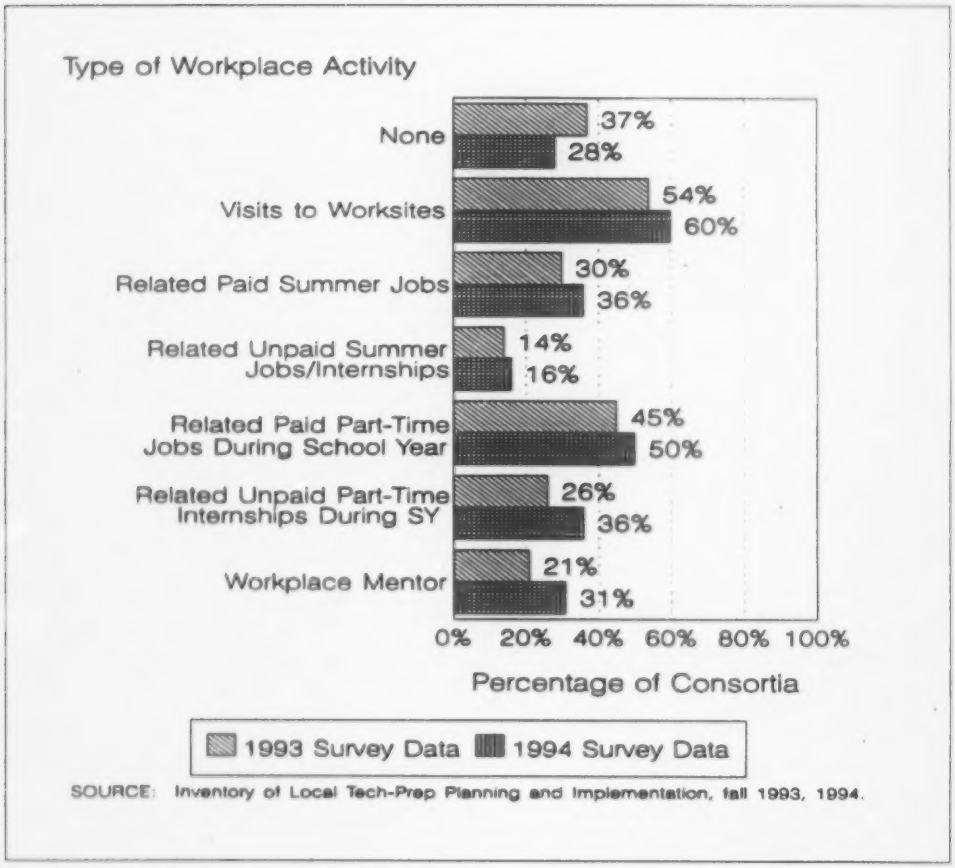
- Both the percentage of consortia that include businesses/corporations, business/industry trade associations, or labor groups as members and the total number of these groups participating increased between 1993 and 1994.

- Tech-Prep consortia received broader support from business, industry, and labor in 1994 than in 1993. Significantly higher proportions of consortia received support for paid youth apprenticeships and other paid employment experiences related to students' Tech-Prep career focus. Business, industry, and labor increased their contribution to Tech-Prep by providing a higher proportion of consortia with paid student workplace experiences, guest speakers for classrooms, opportunities for students to tour work sites, and other career awareness activities.

- The availability of workplace experiences for Tech-Prep students has increased (Figure 3). In fall 1994, 72 percent of consortia reported offering workplace activities to Tech-Prep students in at least one member district, compared with 63 percent in fall 1993. For example, workplace visits were available in 60 percent of consortia in 1994, compared with 54 percent of consortia in 1993. Few consortia actually required Tech-Prep students to participate in them, however. In 1994, only 35 percent of the consortia that offered workplace experiences considered participation in them a part of the core Tech-Prep program.

FIGURE 3

AVAILABILITY OF WORKPLACE EXPERIENCES TO TECH-PREP STUDENTS, FALL 1993 AND FALL 1994



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994.

The national evaluation's annual survey of Tech-Prep consortia provides a rich longitudinal database for assessing Tech-Prep development. Future rounds of data collection in fall 1995 and fall 1996 are likely to yield more information on student participation and outcomes, particularly longer-term outcomes, such as attainment of an associate degree and/or related employment, that many consortia are only now beginning to realize and track. Moreover, data in later years will offer continuing insight into school-to-work implementation progress in Tech-Prep communities.

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I. INTRODUCTION

Tech-Prep is an important education reform strategy that has been adopted by communities throughout the nation and is guided and supported by state and federal agencies. This reform model seeks to improve the career preparation, technical knowledge, and mathematics, language, and reasoning skills of American youth by supporting career-oriented programs of study that link secondary and postsecondary education and academic and vocational instruction. Federal legislation has provided substantial funding for development of Tech-Prep programs, and for a national evaluation to document their planning and implementation. This report is one of a series prepared by Mathematica Policy Research, Inc. (MPR) as part of the national evaluation of Tech-Prep for the U.S. Department of Education (ED). The report describes the status of Tech-Prep implementation in 1994 and documents changes in implementation since 1993, based on the first two waves of longitudinal data collected from local Tech-Prep consortia. It builds upon an earlier, more comprehensive report on the status of Tech-Prep development in 1993.

TECH-PREP PROGRAM BACKGROUND

Tech-Prep was conceived in the early 1980s as a strategy for improving the skills and employment preparation of American youths, particularly those who might not otherwise pursue higher education. The Tech-Prep model emphasizes applied learning--teaching academic concepts through practical hands-on experience--and development of clearly defined academic and technical competencies. Students are offered planned career "pathways" that link their high school classes to advanced technical education in community colleges, technical colleges, or apprenticeship programs and, in some cases, to baccalaureate programs. Ideally, these pathways help students develop qualifications for well-paying jobs in fields with strong and growing labor demand.

Strong interest in the Tech-Prep concept among educators and policymakers, as well as growing concern about strengthening the skill levels of American youths, led to an emphasis on technology-oriented education in the reauthorization of the Carl D. Perkins Vocational Education Act of 1984. The 1990 amendments, which retitled the legislation the Carl D. Perkins Vocational and Applied Technology Education Act (Perkins Act), provided Tech-Prep program development guidelines and funding in Title IIIE, labeled the Tech-Prep Education Act. All programs funded under the Perkins Act, including Tech-Prep, are administered by ED.

Title IIIE of the Perkins Act identified seven essential elements of programs eligible for federal Tech-Prep funding.

1. ***Articulation agreements*** between secondary and postsecondary participants in Tech-Prep consortia, to establish a basic framework that links secondary and postsecondary courses

2. ***At least a 2+2 design***, which defines a common core of math, science, communications, and technology for all students as a basis for more advanced and specialized courses during four-year or six-year program sequences

3. ***A Tech-Prep curriculum*** appropriate to the needs of each secondary and postsecondary institution, so that the overall program design makes full use of each school's resources but also considers the needs of its student body

4. ***Joint staff development for secondary and postsecondary instructors,*** to promote cooperation and a common understanding of objectives, overcome turf jealousies, and maximize the "seamlessness" of the overall curriculum content in four-year program sequences

5. ***Training, to promote effective student recruitment, retention, and postprogram placement,*** that involves both secondary and postsecondary counselors

6. ***Preparatory services,*** such as recruiting, counseling, and assessment, to help students understand the Tech-Prep option, explore the educational and career options open to them through Tech-Prep, and make decisions on program and course selection and career direction

Title IIIE authorizes federal funding for Tech-Prep programs that meet the design and implementation requirements specified in the legislation. Federal funds are distributed to states, which then award grants for planning and implementation to consortia of local secondary educational agencies and postsecondary institutions to plan and operate Tech-Prep programs. The U.S. Congress first appropriated $63.4 million to support development of Tech-Prep programs in fiscal year (FY) 1992. It has continued to fund Tech-Prep in each subsequent year; FY 1996 funding for Title IIIE is $107.7 million.

THE NATIONAL EVALUATION

The 1990 Carl D. Perkins Vocational and Applied Technology Act authorized funding for Tech-Prep (in Title IIIE of the act) and required the Secretary of Education to submit a report on the effectiveness of the program at the end of the first cycle of federal funding. In October 1992, ED's Office of Policy and Planning awarded a contract to MPR and its subcontractor--Northwest Regional Education Laboratory (NWREL)--to conduct a national evaluation of the Tech-Prep Education Program.

The national evaluation has two primary objectives. First, it describes the Tech-Prep programs funded under the Perkins Act--documenting the number of programs, their characteristics, the institutions involved, the populations they serve, and their planning and implementation activities. Second, it aims to identify effective practices in order to provide guidance to program consortia. The evaluation will also measure the progress of Tech-Prep students in high school and postsecondary programs in selected sites.

The five-year evaluation has three major data collection components:

- ***A survey of state-level Tech-Prep coordinators,*** to document the state role in funding and guiding the development of Tech-Prep programs--conducted twice, in the fall of 1993 and 1996

- ***A survey of local Tech-Prep consortia,*** to document their characteristics and development--conducted annually for four years beginning in the fall of 1993

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- ***In-depth studies of selected local programs***, to identify and document in detail how these programs have been planned, designed, and implemented--conducted annually for four years beginning in the 1993-94 school year

The first surveys of state and local Tech-Prep coordinators were administered in fall 1993. Data collection continued through March 1994 and analysis of the data was completed in the spring of that year. The resulting report detailed the characteristics of Tech-Prep consortia in 1993, the methods and resources used to foster Tech-Prep development, the size and general characteristics of the Tech-Prep population during the 1992-1993 school year, and the outcomes achieved by Tech-Prep students in 1993 (Silverberg and Hershey 1995). The report based on the 1993 data is an important companion document to the current report, which updates these earlier results.[1]

Beginning in fall 1993, we also conducted a first round of visits to the 10 sites selected for the in-depth studies. In site visits lasting three to four days, evaluation staff conducted discussion-style interviews with a wide range of key individuals--high school and college administrators, faculty, and counselors, representatives of actively involved employers and labor or community groups, and consortium coordinators and staff. Evaluation staff also conducted focus groups with students participating in Tech-Prep and observed key vocational and academic classes. We completed a report containing detailed profiles of each in-depth study site and discussion of implementation issues that are likely to affect the longer-term strength of Tech-Prep development (Hershey, Silverberg, and Owens 1995).

In fall 1994, we completed the second phase of data collection for the national evaluation. Another set of visits was made to the in-depth study sites. A report describing promising practices for implementing key components of Tech-Prep is currently being prepared, based largely on those visits. The second annual survey of local consortium coordinators was also administered in fall 1994. This report presents the analysis of these survey data.

DATA SOURCES FOR THIS REPORT

The current report documents the continuing development of Tech-Prep, with specific emphasis on progress made between 1993 and 1994. The report draws on two major data sources. Information on local Tech-Prep implementation came from survey questionnaires administered to consortium coordinators in fall 1993 and again in fall 1994--*The Inventory of Local Tech-Prep Planning and Implementation*. Some background information--specifically, data on secondary district enrollments--was obtained from data files compiled by ED's National Center for Education Statistics (NCES). Each data source is discussed below.

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[1]The earlier document is hereafter referred to as the "1993 report." In later chapters of the current report we cite sections and page numbers from the 1993 report to allow readers to refer back to its content for additional detail.

Inventory of Local Tech-Prep Planning and Implementation

The Inventory of Local Tech-Prep Planning and Implementation was mailed for the first time in fall 1993 to the coordinators of Tech-Prep consortia that were operating with Title IIIE funding during fiscal year (FY) 1993. These consortia included both those that were funded in FY 1993 but had received their first Title IIIE grant for the prior year (we subsequently call them FY 1992 grantees) and those that had received their first grant for FY 1993 (FY 1993 grantees). According to the evaluation design, both FY 1992 and FY 1993 grantees would continue in the survey sample each additional year of data collection, as would any new consortia funded by Title IIIE in succeeding years.

The response to the fall 1993 survey of local coordinators was high. A total of 812 FY 1993-funded consortia were identified and sent questionnaires; 702 consortium coordinators completed and returned their questionnaires, for an overall response rate of 86 percent.

The Inventory of Local Tech-Prep Planning and Implementation was mailed for the second time in fall 1994, based on an updated list of consortia that was expanded to include those funded for the first time for FY 1994 (FY 1994 grantees). The sample for the second survey also changed slightly because some already existing consortia had merged together.

The response to the fall 1994 survey was higher than in the first year. A total of 953 consortia funded for FY 1994 or earlier were mailed questionnaires; 867 of these questionnaires were completed and returned, for an overall response rate of 91 percent.[2] The 1994 survey response rates by state are presented in Table I.1.

Response to the second wave of the survey was higher than in the first year for several reasons. Most local coordinators were completing the questionnaire for the second time and were therefore familiar with the types of information requested. Materials mailed with the 1993 survey and letters sent to state Tech-Prep coordinators in summer 1994 explained that all 1993 survey sample members would be included in the remaining three years of data collection. During and after the 1993 survey, some local coordinators began to implement systems to collect data from their members in anticipation of the fall 1994 survey. Impending Congressional action on the Perkins Act also probably contributed to the high response rate. Many state and local coordinators were anxious to document the full range of their Tech-Prep activities to underscore their commitment to continued development.

The 1994 survey questionnaire was identical to the 1993 questionnaire, with two small exceptions. First, several new questions focusing particularly on workplace activities were added, as were some new response categories in existing questions, to ascertain the extent to which Tech-Prep consortia are involved in activities promoted by the School-to-Work Opportunities Act (STWOA).[3]

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[2]In both FY 1993 and FY 1994, the true number of existing consortia was actually somewhat higher than reported here because consortium mergers reduced the number that could potentially be surveyed. The difference was approximately 10 consortia in FY 1993 and 15 consortia in FY 1994. Response rates were based on the confirmed 812 and 953 figures.

[3]Data collected from these new questions will be the focus of an additional report on the status of school-to-work efforts among Tech-Prep consortia, expected to be completed in summer 1995.

TABLE I.1

LOCAL 1994 SURVEY RESPONSE RATES, BY STATE

State	Survey Sample[a]	Number of Respondents	Response Rate
Alabama	26	25	96
Alaska	2	2	100
Arizona	15	15	100
Arkansas	8	8	100
California	83	78	94
Colorado	26	23	88
Connecticut	12	11	92
Delaware	1	1	100
District of Columbia	1	1	100
Florida	25	21	84
Georgia	78	67	86
Hawaii	1	1	100
Idaho	6	6	100
Illinois	29	28	97
Indiana	15	15	100
Iowa	15	10	67
Kansas	8	7	88
Kentucky	73	65	89
Louisiana	14	13	93
Maine	6	6	100
Maryland	16	16	100
Massachusetts	11	11	100
Michigan	39	33	85
Minnesota	27	22	81
Mississippi	15	15	100
Missouri	12	12	100
Montana	8	3	38
Nebraska	6	6	100
Nevada	4	3	75
New Hampshire	6	3	50
New Jersey	22	20	91
New Mexico	13	13	100
New York	30	30	100
North Carolina	56	54	96
North Dakota	1	1	100
Ohio	24	24	100
Oklahoma	10	10	100
Oregon	18	12	67

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TABLE I.1 *(continued)*

State	Survey Sample[a]	Number of Respondents	Response Rate
Pennsylvania	25	20	80
Rhode Island	1	1	100
South Carolina	16	16	100
South Dakota	4	4	100
Tennessee	14	13	93
Texas	25	24	96
Utah	9	9	100
Vermont	9	6	67
Virginia	27	25	93
Washington	22	22	100
West Virginia	13	13	100
Wisconsin	16	16	100
Wyoming	8	5	63
Puerto Rico	1	1	100
Virgin Islands	1	1	100
U.S. Total	**953**	**867**	**91**

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994.

[a]The survey sample was defined as all Tech-Prep consortia that had received Title IIIE funding for FY 1994 or earlier.

Second, two versions of the questionnaire were administered. Coordinators who responded to the fall 1993 survey received a questionnaire that was slightly "streamlined." To minimize burden on respondents, we eliminated some questions pertaining to program features that were likely to remain stable over the year. Consortia included in the survey sample for the first time (those funded for the first time for FY 1994) and older consortia that did not respond to the 1993 survey received the longer version of the questionnaire. All consortia will receive the long version for the third year of the evaluation survey in fall 1995.

Nearly three-quarters of the 1994 survey sample received the shorter questionnaire. Thus a substantial portion of respondents (75 percent) had no 1994 data on the topics eliminated: (1) consortium governance and staffing; (2) methods used to facilitate access for special populations; (3) secondary and postsecondary curriculum development and articulation; (4) counseling, guidance, and career development; and (5) monitoring and evaluating Tech-Prep progress. For these consortia, their 1993 survey responses to questions on these topics were used to generate 1994 tabulations for the entire sample. Statistics on the full universe of consortia thus include some items measured in fall 1993 for most respondents.

NCES Common Core Database

The Common Core Database is a national statistical database containing information on all public elementary and secondary schools and districts in the United States. It is compiled each year from data collected by NCES and the U.S. Bureau of the Census. At the time of the fall 1993 survey, the most recent data available was for school year 1991-1992. The 1992-1993 school year data was made available in time to use for analyzing the fall 1994 survey information.

NCES school-level data were used to reduce the response burden on local coordinators. The local survey asked coordinators to report the NCES ID number for each secondary district in their consortium. Using the district identifiers, school enrollments were aggregated by high school grade and by racial/ethnic groups for districts in each consortium.[4]

ORGANIZATION OF THE REPORT

The remainder of the report is divided into three chapters. Chapter II discusses the expansion of Tech-Prep consortia between 1993 and 1994, including any changes in their number and location, membership,

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[4]There are two limitations to drawing on the NCES Common Core data for this analysis. First, the most recently available NCES data for each year of the survey were for the school year prior to the focus of the survey. For example, the fall 1993 survey collected information about Tech-Prep student participation and outcomes in school year 1992-1993, but the NCES data available and used was for 1991-1992. Similarly, for the fall 1994 survey, we matched the most recent NCES data--for school year 1992-1993--to survey data that reflected 1993-1994 Tech-Prep participation. Our analysis of district enrollments using the two years of NCES data shows little annual change, however. Thus, comparisons of Tech-Prep student data from one year with NCES student data from the earlier year are still likely to be fairly accurate. Second, six states did not report to ED on their school enrollments by racial/ethnic group. Consequently, comparisons of the racial/ethnic distribution of Tech-Prep students with the distribution of all secondary students in Tech-Prep districts exclude those states.

and resources. Chapter III describes the development of Tech-Prep program characteristics during that year--their occupational direction, curricula and articulation, career development activities, workplace opportunities for students, and promotion and staff development efforts. The final chapter describes changes in reported student participation and outcomes.

II. EXPANSION OF TECH-PREP

The growth and implementation progress of any new initiative can be an important indicator of success. With the fifth cycle of Title IIIE funding mostly completed, it is important to determine the extent to which Tech-Prep has been adopted and expanded. This chapter examines the growth of Tech-Prep consortia between 1993 and 1994. First, we describe changes in the number of consortia, the districts they cover, where they are being developed, and how large they are. We then discuss changes in consortium membership and resources.

THE NUMBER, LOCATION, AND SIZE OF TECH-PREP CONSORTIA

Over the relatively short history of the federal Tech-Prep Education Program, new consortia have been formed and funded and existing consortia have either merged with one another or split into smaller new entities. The overall number of consortia receiving Title IIIE grants and the settings in which the grants are being implemented can be affected by such factors as federal funding levels, pre-existing relationships among educational institutions, and state policies. This section documents the extent to which the number, location, and size of Tech-Prep consortia changed between 1993 and 1994.

Tech-Prep continued to expand in its third year of federal funding

The number of Tech-Prep consortia grew substantially between FY 1993 and FY 1994. State agencies funded 138 new consortia for FY 1994 (FY 1994 grantees), an increase of 17 percent over the number of consortia existing in FY 1993 (Table II.1). By FY 1994, there were 953 consortia either in the planning or implementation stage.

About half the states (24) awarded grants to new consortia for FY 1994. Of those, 16 funded fewer than 5 new grantees; three states funded more than 10 new consortia. Two states-- Iowa and New Hampshire--awarded fewer than 10 new grants but increased the total number of consortia in the state by 100 percent or more between FY 1993 and FY 1994.

As might be expected, fewer new grants were awarded for FY 1994 than in previous years. In contrast to the 138 new consortia funded for FY 1994, almost 280 consortia had been funded for the first time for FY 1993. The lower number of new grantees for FY 1994 is consistent with the overall pattern of state Title IIIE awards since federal Tech-Prep funding began. The number of new grantees has been declining each year Title IIIE funds have been available, for two main reasons. First, the vast majority of consortia continue to be funded by their state agencies after the initial grant, leaving less funding to be distributed to new consortia. Second, with each round of new grantees, existing consortia include more and more of the states' secondary school districts, leaving little room for expansion to new localities in succeeding years.

TABLE II.1

NUMBER OF NEW TECH-PREP CONSORTIA FIRST FUNDED EACH YEAR, BY STATE

State	FY 1992	FY 1993	FY 1994	Total
Alabama	19	5	2	26
Alaska	1	1	0	2
Arizona	12	3	0	15
Arkansas	7	1	0	8
California	0	65	18	83
Colorado	13	5	8	26
Connecticut	7	3	2	12
Delaware	1	0	0	1
District of Columbia	1	0	0	1
Florida	11	8	6	25
Georgia	32	25	21	78
Hawaii	1	0	0	1
Idaho	6	0	0	6
Illinois	29	0	0	29
Indiana	15	0	0	15
Iowa	7	0	8	15
Kansas	6	0	2	8
Kentucky	27	26	20	73
Louisiana	9	3	2	14
Maine	4	2	0	6
Maryland	15	1	0	16
Massachusetts	10	1	0	11
Michigan	39	0	0	39
Minnesota	18	5	4	27
Mississippi	6	8	1	15
Missouri	6	6	0	12
Montana	5	0	3	8
Nebraska	6	0	0	6
Nevada	3	0	1	4
New Hampshire	2	0	4	6
New Jersey	13	7	2	22
New Mexico	11	2	0	13
New York	14	14	2	30
North Carolina	31	17	8	56
North Dakota	1	0	0	1
Ohio	8	7	9	24
Oklahoma	6	4	0	10
Oregon	18	0	0	18

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TABLE II.1 *(continued)*

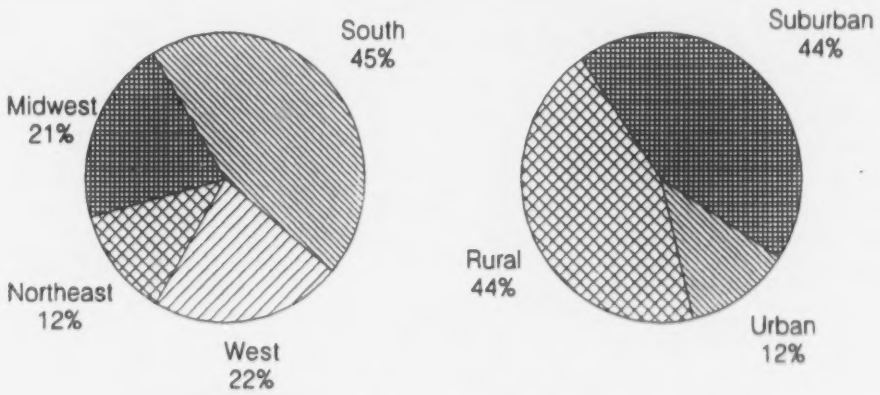
State	FY 1992	FY 1993	FY 1994	Total
Pennsylvania	14	7	4	25
Rhode Island	1	0	0	1
South Carolina	16	0	0	16
South Dakota	0	4	0	4
Tennessee	14	0	0	14
Texas	21	4	0	25
Utah	5	3	1	9
Vermont	5	4	0	9
Virginia	3	24	0	27
Washington	10	8	4	22
West Virginia	7	3	3	13
Wisconsin	16	0	0	16
Wyoming	4	1	3	8
Puerto Rico	1	0	0	1
Virgin Islands	1	0	0	1
U.S. Total	**538**	**277**	**138**	**953**

Tech-Prep consortia remain concentrated in the South and in suburban and rural areas

The addition of FY 1994 grantees did not change the overall geographic distribution of Tech-Prep initiatives. Almost half of all Tech-Prep consortia are located in the South, with proportionally fewer consortia in the Northeast (Figure II.1). Equally large proportions of consortia (44 percent) are implemented in rural or suburban areas.[1] This distribution of Tech-Prep consortia in 1994 is virtually identical to the distribution of consortia in 1993.

FIGURE II.1

GEOGRAPHIC DISTRIBUTION OF TECH-PREP CONSORTIA IN 1994



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994.

The concentration of consortia in the south appears to reflect regional differences in consortium composition and funding strategies rather than priority placed on Tech-Prep. Although many more consortia have been formed in the southern states, these consortia are smaller--that is, include fewer school districts--than are consortia in other regions. For example, more than 70 percent of consortia in Georgia, Kentucky, and North Carolina contain a single district, compared to fewer than a third of consortia overall. On average, southern consortia include 5 secondary districts, while consortia in the Midwest include 15 districts, consortia in the Northeast include 11 districts, and those in the West include 6 districts, on average. In fact, southern Tech-Prep consortia cover approximately the same proportion of the districts in their region as do consortia located in the Midwest and the West (about

[1]Measure of metropolitan status is based on standard Metropolitan Statistical Area (MSA) designations: (1) Rural = non-MSA, (2) Suburban = MSA, non-central city, and (3) Urban = MSA, central city.

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57 percent of all districts in the region). Consortia located in the Northeast include close to 45 percent of the region's districts. Thus, Tech-Prep is about equally well represented in all four regions of the country.

Relatively few consortia are operating in primarily urban locales, largely because there are many fewer urban districts in the United States than suburban or rural districts (Figure II.1). However, urban communities are well represented in Tech-Prep consortia. Of all secondary school districts classified as urban (central city), 75 percent belong to Tech-Prep consortia. In contrast, approximately 60 percent of suburban school districts and 53 percent of rural districts are members of Tech-Prep consortia. Thus, urban districts are more likely than other types of districts to be included in a Tech-Prep consortium.

The lack of any significant change in the location and setting of Tech-Prep consortia between 1993 and 1994 is not surprising. The new FY 1994 grantees account for only one quarter of the overall respondent sample in fall 1994, and therefore do not have a significant impact on aggregate statistics. In fact, FY 1994 grantees were somewhat less likely to be suburban and more likely to be located in rural areas than older consortia. This probably reflects the spread of Tech-Prep into more remote areas, since existing consortia already include many of each state's secondary districts. Despite these differences, the overall geographic distribution of consortia remained stable over the two years.

Tech-Prep consortia now include more than half of all U.S. school districts

If all consortium members were actively implementing comprehensive models, Tech-Prep would certainly be a wide reaching reform. With the addition of new consortia in FY 1994, more than 6,594 school districts were members of Tech-Prep consortia. New FY 1994 grantees added more than 1,500 districts to the approximately 5,000 districts included in Tech-Prep consortia that were funded for FY 1993 or earlier.[2] All Tech-Prep member districts--and their schools--do not participate in Tech-Prep to the same degree, however. "Membership" in a consortium reflects varying approaches to and levels of involvement in Tech-Prep implementation as well as different stages of development.

Tech-Prep districts currently account for a substantial share of all U.S. school districts. In fall 1994, Tech-Prep districts in consortia that responded to the survey represented 58 percent of the approximately 11,000 secondary school districts in the United States, compared to 44 percent of all secondary school districts in fall 1993. If we assume non-responding consortia have, on average, the same number of secondary school districts as responding consortia, then Tech-Prep districts would have covered 63 percent of all secondary districts in 1994 and 51 percent of all secondary districts in 1993.

Because of the large number of districts involved, Tech-Prep has the potential to affect many students. In 1994, about 75 percent of all secondary students in the United States were going to school in districts that are members of Tech-Prep consortia, up from 61 percent in FY 1993. These figures are underestimates, however, because they are based only on survey respondents; we were not able to identify districts and count students in nonresponding consortia. Adjusting for nonresponse yields

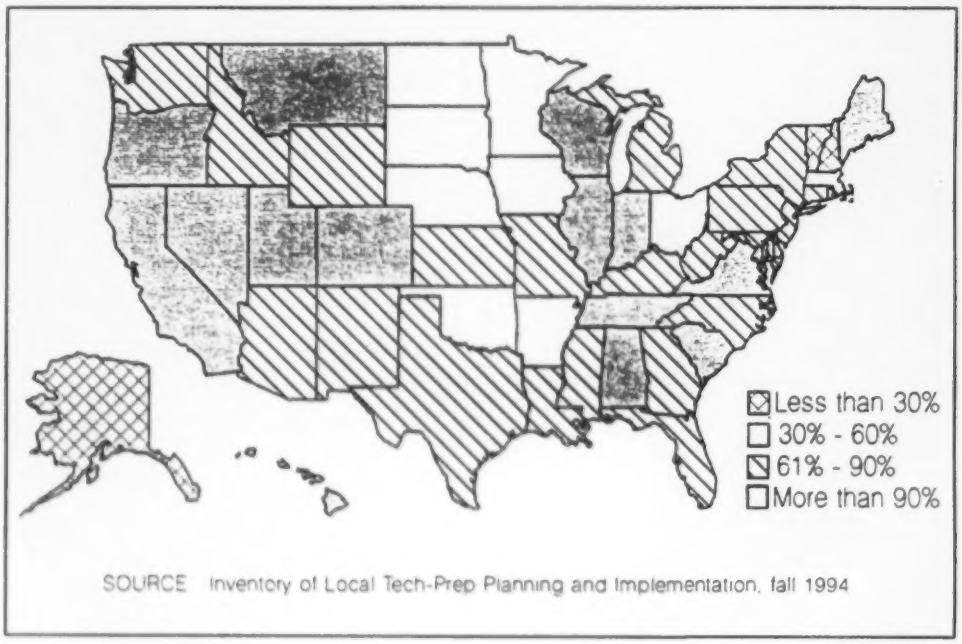
[2]Some of these districts were included in more than one Tech-Prep consortium.

national estimates of Tech-Prep student coverage of 82 percent in 1994 and 71 percent in 1993.[3] Both the adjusted and unadjusted figures suggest that the proportion of students who could possibly be influenced by Tech-Prep reforms has grown substantially.

Although the pool of potential Tech-Prep participants is high nationwide, the percentage of secondary students included in Tech-Prep districts varies significantly across states. Adjusted estimates range from 4 percent to 100 percent (Figure II.2).[4] Variation among states depends largely on differences in the number and size of consortia awarded Title IIIE grants.

FIGURE II.2

PERCENTAGE OF SECONDARY STUDENT POPULATION INCLUDED IN 1994 TECH-PREP CONSORTIA, BY STATE



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994

[3]Estimates were adjusted by dividing the computed percentage of secondary enrollments by the survey response rates for each year.

[4]In states with very low response rates, these adjustments may yield inaccurate estimates. Only 7 states had response rates lower than 80 percent, however (see Table I.1).

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Tech-Prep consortia come in different shapes and sizes, although most include multiple districts

Overall, the size and configuration of Tech-Prep consortia remained unchanged between fall 1993 and fall 1994, even with the addition of new FY 1994 grantees. Most consortia have only one or two postsecondary partners (Table II.2). Fewer than one-third include only a single secondary district and more than half include more than five districts. In both years, consortia in the Midwest and those implemented primarily in suburban locales were larger--included more secondary districts and postsecondary institutions--than other consortia. Newer grantees were smaller than more established consortia; on average, FY 1994 grantees included about 9 educational institutions (both secondary and postsecondary), FY 1993 grantees included 12 institutions, and FY 1992 grantees included nearly 18 institutions.

CONSORTIUM MEMBERSHIP

Partnerships of secondary and postsecondary education institutions and other organizations are expected to carry out the implementation of Tech-Prep. Consortia differ by the *types* of education entities that are included, as well as the extent to which business, industry, and labor groups are viewed as active members. Changes in the composition of consortia can be an indicator of the direction in which Tech-Prep is developing.

Education institutions are participating in Tech-Prep in greater numbers

Many more education institutions were included as members of Tech-Prep consortia in 1994 than in 1993. The number of secondary school districts that are members of Tech-Prep consortia rose from 5,489 to 7,042--or by almost one third (Figure II.3).[5] At least 150 more vocational centers and almost 300 additional two-year colleges were included in Tech-Prep consortia in 1994. The number of four-year colleges and universities participating in Tech-Prep consortia increased by almost 50 percent--from 420 to 611.

For the most part, these increases in absolute numbers reflect both the addition of new consortia between 1993 and 1994, and the expansion of older consortia. Overall, the average number per consortia of secondary districts, secondary schools, and four-year colleges grew, with substantial increases among older consortia. The average number of two-year colleges stayed approximately the same, but the average number of vocational centers, proprietary institutions, and apprenticeship programs declined slightly.

Business, industry, and labor membership in Tech-Prep consortia expanded significantly

Inclusion of business, industry and labor as members of Tech-Prep consortia grew between 1993 and 1994. Both the percentage of consortia that include businesses/corporations, business/industry trade associations, or labor groups as members and the total number of these groups participating increased (Figure II.3).

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[5]Reported numbers of participating districts from both the 1993 and 1994 surveys include some double-counting, as explained on page 20.

TABLE II.2

CONSORTIUM SIZES AND CONFIGURATIONS
(Number of Consortia)

	Number of Postsecondary Institutions[a]							
Number of Secondary Districts	0[b]	1	2	3	4	5-10	>10	Total
1	7	105	57	34	12	34	4	253
2	1	29	11	8	4	2	2	57
3	2	24	10	7	5	4	0	52
4	0	25	9	4	3	5	1	47
5-10	0	112	51	33	18	25	1	240
11-20	1	59	29	10	17	20	2	138
21+	2	25	12	10	6	20	5	80
Total	**13**	**379**	**179**	**106**	**65**	**110**	**15**	**867**

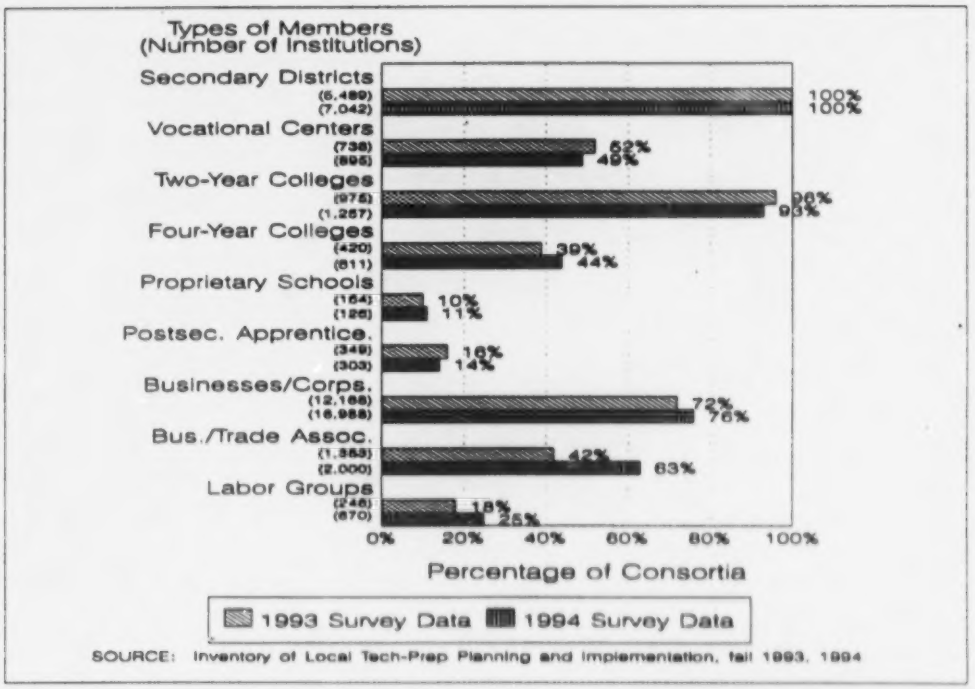
SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994.

[a]Includes community and technical colleges, four-year colleges and universities, proprietary schools, and registered apprenticeship programs.

[b]13 consortia reported having no postsecondary institutions as members, despite a federal requirement that all Title IIIE-funded consortia include at least one such institution.

FIGURE II.3

1994 MEMBERSHIP IN TECH-PREP CONSORTIA



The percentage of consortia that reported including businesses rose from 72 percent in 1993 to 76 percent in 1994, but the total number of firms reported rose by 40 percent (from 12,168 to 16,988).[6] This increase is due largely to the expansion of older consortia included in the 1993 survey sample; the average number of firms included as members rose from 21 to 23 for FY 1992 grantees and, even more important, from 7 to 16 for FY 1993 grantees. Some of the increase in the total number of business consortium members is due to the addition of the FY 1994 grantees, however. Although only 138 FY 1994 grantees were added to the 1994 survey sample, these consortia reported an average of 12 firms as consortium members.

The percentage of consortia that included trade associations as members was dramatically higher in 1994 (63 percent) than in 1993 (42 percent). Labor groups were reported as members by 25 percent of consortia, up from 18 percent in fall 1993. Moreover, the average number of trade associations and labor groups increased between 1993 and 1994.

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[6]Seven responses to this question were deemed inaccurate and were eliminated from this computation. Out-of-range responses were identified by comparing the number of businesses reported as members to the population of the city or town in which the consortium was based, the number of secondary districts included in the consortium, and the number of businesses reported as members in the fall 1993 survey.

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That the expansion of private sector and labor membership in Tech-Prep consortia coincided with the drafting of the School-to-Work Opportunities Act is no surprise. The STWOA promotes a system of integrated school-based and work-based programs that requires substantial commitment from business, industry, and labor. Many consortia view Tech-Prep as a natural foundation for the school-based components of school-to-work systems and appear to have solicited some or additional employer and labor involvement even before STWOA local implementation grants were awarded.[7]

Tech-Prep consortia received broader support from business, industry, and labor in 1994 than in 1993

Membership in a consortium is distinct from providing tangible assistance for Tech-Prep planning and implementation. Business, industry, and labor were involved in both, and the ways in which these groups assist Tech-Prep development expanded between 1993 and 1994. Although nearly identical proportions of consortia received some support from businesses, trade associations, or labor groups in both years, consortia that received support were given more types of assistance in FY 1994 than in the previous year. Employers and labor organizations reportedly expanded their help in planning and implementing Tech-Prep to more consortia and in virtually all categories of support (Table II.3).

In particular, a much higher proportion of consortia reportedly received business, industry, and labor support for paid youth apprenticeships and other paid employment experiences related to students' Tech-Prep career focus (32 percent in FY 1994 versus 11 percent in FY 1993).[8] Some of this increase is probably the result of consortium efforts to adopt elements of the STWOA. It is important to note, however, that these statistics do not in any way indicate the magnitude of student participation in these "apprenticeship" positions. Some consortia may be reporting traditional co-op programs that serve just a handful of students in this category of business support.

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[7]A small number of STWOA grants to local partnerships were awarded as early as August 1994. Only a few of the eight states that received STWOA implementation grants had distributed sub-grants to local partnerships by the time of the fall 1994 survey. Some states did use STWOA development grants--awarded to all states in winter 1993-1994--to provide start-up or planning grants to localities.

[8]Some of the apparent increase in this type of support may be due to changes in question wording made to the 1994 survey questionnaire. The 1993 questionnaire contained categories for "Providing work-based learning opportunities" and "Providing slots for Tech-Prep students to enter apprenticeships," among others. We believe this caused some respondent confusion. Some coordinators may have responded to the second category only if Tech-Prep included business ties to *registered* apprenticeships while others took a broader view and responded to the category if businesses provided less formal youth apprenticeships. The "work-based learning" responses probably included both paid and unpaid experiences. To minimize the confusion, we changed the wording of both categories for the 1994 survey questionnaire; "work-based learning" was changed to "unpaid work/training experience in a position related to a Tech-Prep course or career focus" and "apprenticeship" was changed to "paid youth apprenticeship or employment experience in a position related to a Tech-Prep course or career focus." These changes make direct comparisons between the 1993 and 1994 survey responses to these categories somewhat uncertain.

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TABLE II.3

TYPES OF SUPPORT RECEIVED FROM BUSINESSES, CORPORATIONS, TRADE ASSOCIATIONS, AND LABOR ORGANIZATIONS IN FY 1993 AND FY 1994
(Percent of Consortia)

Types of Support	FY 1993	FY 1994
Working with Staff		
Curriculum Development	57	61
Outcomes Definition	49	54
Identifying Career Areas	36	39
Marketing Tech-Prep	53	52
Staff Development	44	51
Provide Speakers	49	57
Working with Students		
Career Awareness	47	57
Employees Teaching	16	18
Mentoring	20	28
Facility Tours	47	58
Work-Based Learning[a]	32	NA
Unpaid Work Experience	NA	32
Apprenticeships[a]	11	NA
Paid Work Experience	NA	32
Priority Hiring	6	8
Material Resources		
Awards for Students	18	23
Awards for Teachers	6	8
Equipment	29	38
Classroom Space	16	21
None	**24**	**23**

SOURCE: Inventory of Local Tech-Prep Planning and Implementation; fall 1993, 1994.

[a]Changes in the wording of response categories for this item were made to the 1994 survey questionnaire to provide greater clarification and consistency with other survey items.

NA = not available.

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Business, industry, and labor also reportedly increased their contribution to Tech-Prep by providing more consortia with guest speakers for classrooms, opportunities for students to tour worksites, and other career awareness experiences. These activities are also consistent with implementing school-to-work components.

In general, business and labor support expanded in the older consortia. Newer consortia (FY 1994 grantees) were much less likely to receive any support from these groups, and those that did received fewer types of assistance.

Overlap in consortium membership has increased somewhat

The proportion of consortia that share secondary or postsecondary institutions rose between FY 1993 and FY 1994. In fall 1993, 28 percent of responding consortia contained school districts that were counted as members of at least one other consortium. In fall 1994, 33 percent shared at least one member district.

This increase reflects several phenomena. First, new consortia are being established which include some districts that already belong to older consortia. Second, older consortia are expanding their memberships and drawing in districts that are also included in other consortia. Either of these cases may occur because districts often have pre-existing relationships or articulation agreements with multiple postsecondary institutions, each of which is a member of a different consortium. Finally, consortium grants in some states are awarded to groups of secondary and postsecondary institutions that agree to work together on implementing Tech-Prep in particular program areas or career clusters; some of those same institutions may be part of another group that receives a grant to implement a Tech-Prep program in a different career cluster. When consortium members are not drawn together on the basis of geographic proximity, there can be substantial overlap among consortia.

The sharing of postsecondary institutions among consortia may also have increased. No direct measure of such sharing can be computed from the survey data. However, the number and proportion of consortia that have articulation agreements with more postsecondary institutions than they report as consortium members provides an indirect measure. In fall 1993, approximately 20 percent of consortia had articulation agreements with more postsecondary institutions than their member two-year colleges. This proportion increased to 24 percent by fall 1994.

The overlap in consortium membership may result in some overstatement of levels of participation and outcomes.[9] The extent to which the survey data reflect duplicate counts is difficult to quantify because respondents do not identify the specific districts for which they are reporting numbers of participating students. However, of the 459 consortia that reported numbers of Tech-Prep participants in FY 1994, approximately one-quarter share at least one district with another consortium. About one-third of consortia that reported on Tech-Prep high school graduates include a shared district. Further increases in the extent of consortium overlap in succeeding years of the national evaluation could weaken the ability to interpret accurately data on student participation and outcomes.

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[9]Sharing of districts does not affect our estimates of student coverage presented earlier in this chapter, however. The percentage of secondary students included in Tech-Prep districts was computed using a list of identified consortium districts in which duplicates were eliminated.

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CONSORTIUM RESOURCES

Most consortia need resources to plan and implement Tech-Prep components. Whether these resources are provided by federal grants, state budgets, or redirection of local expenditures, it is important to document how they change over time.

Many consortia are operating with somewhat less Title IIIE funding

The average amount of the most recent grant awarded to Tech-Prep consortia decreased from $117,273 (1993 survey responses) to $116,469 (1994 survey responses). This reduction is due to an average decline of about $5,000 in grant awards for older consortia--FY 1992 and FY 1993 grantees. Just over 40 percent of these older grantees reported lower recent Title IIIE grants in fall 1994 as compared to fall 1993, with reductions concentrated among the FY 1992 grantees. In the computation of overall averages for 1993 and 1994 survey respondents, the reduction for older consortia was offset to some extent by higher awards to FY 1994 grantees; their most recent funding was actually higher ($119,834) than the average of funds awarded grantees the previous year ($117,273). For 1993 respondents, the most recent grant received was generally for FY 1994; for 1994 respondents, it was usually for FY 1995.

State agencies may be reducing Title IIIE grants to more established consortia for several reasons. Costs associated with start-up activities--such as developing new curricula or articulation agreements--may decline by the fourth year of operation, lowering consortium budgets and therefore the amounts state agencies award. Some state policies may require consortium members to incorporate Tech-Prep expenditures into their normal budgets over a period of time. Decreasing grant amounts may encourage members to begin contributing needed resources. It was also the case that total federal funding for FY 1994 and FY 1995 was essentially the same--approximately $103 million. Because some states chose to award grants to new consortia for FY 1995, it is natural that the average amount available for each consortium necessarily declined.[10]

Most consortia continue to receive Title IIIE funds once awarded a first grant

Very few consortia with Title IIIE funding for FY 1993 did not receive a grant that covered FY 1994. State Tech-Prep coordinators provided information on funding for 894 of the 953 consortia included in the fall 1994 sample--those in the 1993 survey sample (virtually all of which were funded for FY 1993) and new FY 1994 grantees. Only 26 consortia were not funded for FY 1994, and these were concentrated among a few states (NC, NJ, and WY).

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[10]Changes in the number of consortia awarded Title IIIE grants between FY 1994 and FY 1995 will be documented by the fall 1995 survey and a report based on the survey that will be completed in spring 1996.

Uses of consortium funds stayed stable between 1993 and 1994

Patterns of expenditures by Tech-Prep consortia were virtually identical in FY 1993 and FY 1994. In each year, on average, just under one quarter of all consortium funds was spent on each of three categories of activity: (1) general administrative coordination of consortium activities; (2) staff development: and (3) equipment. The remaining one-quarter was used primarily for curriculum development (15 percent), with the rest of expenditures divided among marketing, evaluation, and other activities.

III. CHARACTERISTICS OF TECH-PREP PROGRAMS

Challenging occupational and academic curricula, linkages between secondary and postsecondary education, and career counseling and exposure lie at the heart of the Tech-Prep reforms. Interest in work-based learning as a component of Tech-Prep has developed more recently, largely in response to the STWOA. This chapter describes the 1994 status of each of these elements of Tech-Prep, and any major changes in overall implementation between 1993 and 1994. The last section discusses the extent of promotion and staff development activities.

CORE PROGRAM ELEMENTS

If Tech-Prep is a distinct program, it could be expected to have a consistent set of activities in which all participating students are involved at some time. Students may have choices within a Tech-Prep program (for example, of career clusters), but what defines the program is a set of requirements that make up a common experience for those participating. Some consortia may choose not to implement Tech-Prep as a program with a required set of student activities--or what we call a "core program." The extent to which consortia implement a core program, as well as the specific activities that comprise the core program, may change over time as Tech-Prep components become more fully implemented.

More consortia have adopted a defined core program for Tech-Prep in at least some of their member schools

Most consortia report having a required set of activities or courses that define the Tech-Prep experience. In 1994, nearly 70 percent had a defined core program in at least one member district, compared to 63 percent of consortia in 1993. In both years, older grantees were more likely to have defined and adopted a required set of activities than were newer grantees.

Of the consortia that defined a core program in each year, about three quarters reported that the definition of the core program was adopted consortiumwide--that is, by all members. In the other consortia with core programs, individual schools or districts determine their own definitions for their Tech-Prep programs.

Workplace experiences have become a more common feature of Tech-Prep programs

Consortia were more likely to report requiring students to participate in a workplace activity in 1994 than in 1993 (Figure III.1). In 1994, almost 60 percent of consortia with consortiumwide core programs reported that occasional workplace experiences such as facility tours or assignment to a workplace mentor were a part of the Tech-Prep core program, compared to 45 percent of consortia in 1993. Similarly, a higher proportion of consortia in 1994 than in 1993 reported including paid or unpaid workplace training or work experience in the defined core program (35 percent in 1994 versus 18 percent in 1993). The more frequent inclusion of workplace activities as a component of Tech-Prep in 1994 probably reflects enthusiasm for school-to-work reforms promoted by the STWOA.

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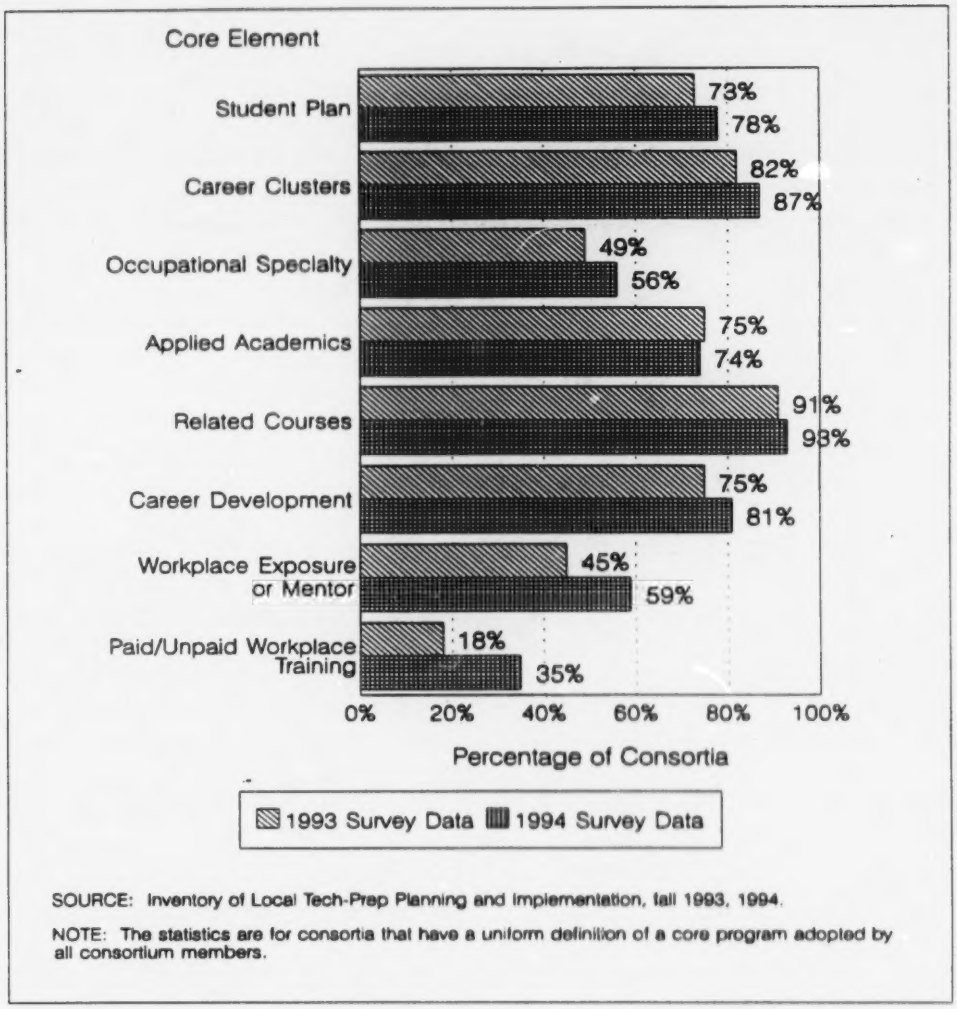
FIGURE III.1

ELEMENTS OF DEFINED CORE PROGRAMS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994.

NOTE: The statistics are for consortia that have a uniform definition of a core program adopted by all consortium members.

Reports on elements of defined core programs continue to reflect, at least partially, consortium goals rather than current program operation, however. Nearly one-third of the consortia that reported including workplace experiences as a core part of Tech-Prep in 1994 did not yet report making workplace experiences available to Tech-Prep students in any of their member districts. In both 1993 and 1994, about 20 percent of the respondents that reported requiring students to choose a broad career cluster as part of the Tech-Prep program model do not, according to another survey question, currently have any member school in which career clusters are defined and being used to guide students' course taking.

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OCCUPATIONAL EMPHASIS

A key component of the Tech-Prep model is a coherent sequence of courses designed to provide students with the skills necessary for entry into an identified career area. Ideally, the sequences include both vocational and academic courses to form a program of study that will prepare a student for a broad group of related occupations or for a particular occupation. The reported availability of these programs of study provides some indication of the direction of Tech-Prep implementation.

Implementation of occupation-focused programs of study remains common, but approaches vary widely

Most consortia report offering career clusters or other occupationally-focused programs of study to guide Tech-Prep students' choice of academic and vocational courses. In fall 1994, just over two-thirds of consortia reported that students choose such an occupational cluster or program in at least one of their consortium districts. An identical proportion of consortia reported defining and using career clusters in fall 1993.[1]

Expansion of programs of study to additional districts was somewhat limited, however. Among consortia that responded to both years of the survey, about 30 percent reported implementing programs of study in more districts in 1994 than in 1993. On the other hand, just under one-quarter offered clusters in fewer districts in 1994 and almost half offered them in the same number of districts in both years. There is some evidence that declines in the reported number of districts may be due to a greater understanding of career clusters or programs of study among consortium coordinators. More than half of the 154 consortia that reported implementing programs of study in fewer districts in 1994 reported implementing them in none of their districts, where they had reported offering them in 4, 5, or up to 17 districts the year before. It seems unlikely that so many districts offering clusters in one year would have abandoned such practices the following year and more likely that coordinators' understanding of an occupationally-focused program of study in 1994 changed between 1993 and 1994. This could mean that the proportion of consortia implementing career clusters as defined in 1994 was actually lower than reported in 1993.

Responses to the fall 1993 and fall 1994 surveys suggest that there are also differing approaches to implementing occupation-focused programs of study across consortia. Some consortia appear to define and use *broad* career clusters--programs of study that cover groups of related occupations and that help build students' understanding of broad career areas. The choice of a career cluster generally provides a basis for initial academic and vocational course planning. In some consortia with broad career clusters, students choose a specific occupational program of study at a later point.

Other consortia focus on much more *narrowly-defined* programs of study. A similar proportion of 1993 and 1994 survey respondents (about 20 percent) wrote in quite specific titles for their programs

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[1]The relevant survey question was altered slightly in two ways for the fall 1994 questionnaire. First, the emphasis on "broad" career clusters was reduced, because so many of the 1993 responses suggested more occupationally-specific programs of study. Second, it was emphasized that cluster or program of study meant a choice that affects students' academic as well as vocational course selections rather than simply the choice of traditional vocational courses.

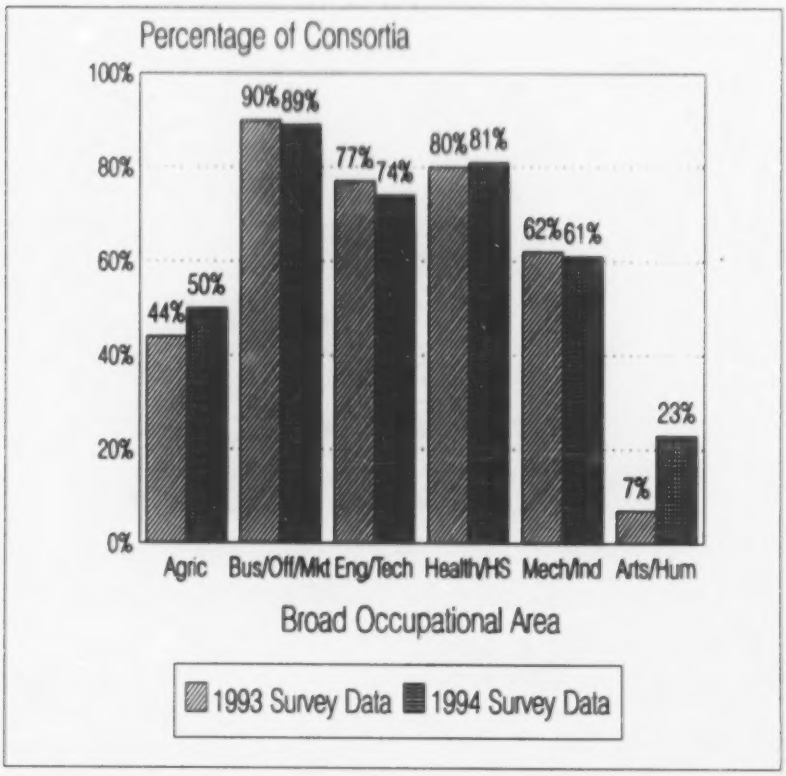
of study--such as restaurant management, diesel engines, and computer-assisted design--rather than using the broad labels suggested in the questionnaire. Such responses are more likely to refer to the availability and choice of traditional vocational courses rather than groups of academic and vocational courses identified as the foundation for entry to general career areas.

The availability of occupational programs of study in 1994 follows the same pattern as in 1993

In fall 1993 and fall 1994, similar proportions of consortia reported offering programs of study or career clusters in the specified broad occupational groupings (Figure III.2). For example, in both years about 90 percent of the Tech-Prep consortia offering any program of study had implemented an occupational cluster or program relating to business, office skills, or marketing. Defined clusters or programs in engineering/technology and health and human services were also common in both 1993 and 1994 but were offered less frequently than a business cluster. As noted in the report on 1993 results (p. 92), this occupational emphasis of Tech-Prep generally follows patterns of vocational course taking.

FIGURE III.2

PERCENTAGE OF CONSORTIA WITH SPECIFIED CAREER CLUSTERS, FALL 1993 AND FALL 1994



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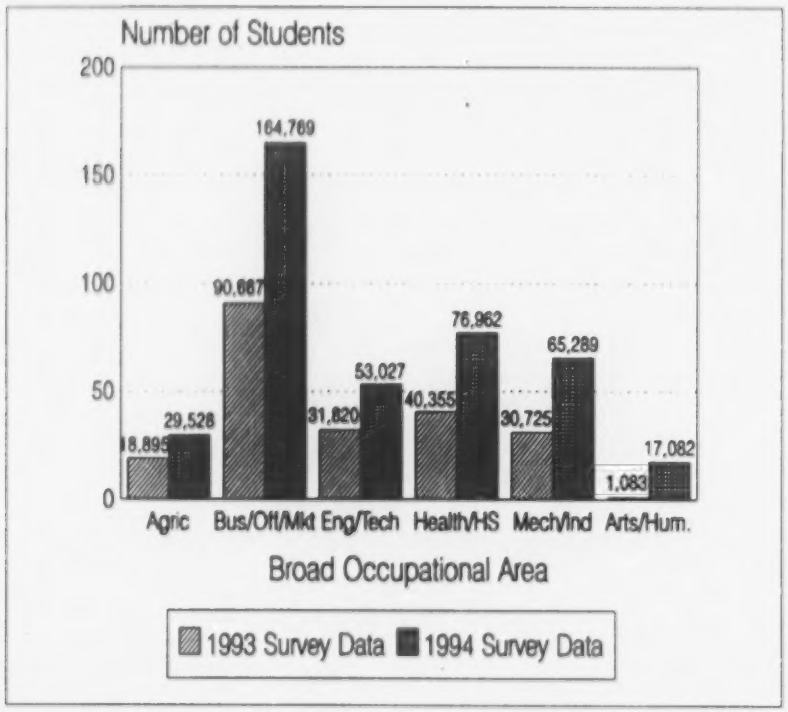
The availability of clusters or programs of study relating to arts and humanities did change significantly between 1993 and 1994. In 1993, only 33 consortia (7 percent of those with career clusters or programs) were offering programs of study in that broad area, compared with 134 consortia (23 percent of consortia with career clusters or programs) in 1994. This large increase in availability may reflect greater interest among Tech-Prep consortia in expanding career clusters to cover all major occupations--an approach consistent with the STWOA's requirement that all students choose a career major by grade 11.[2]

Reported enrollments in programs of study increased substantially between 1993 and 1994

More consortia are enrolling more Tech-Prep students in occupationally-focused programs of study. In fall 1994, almost 75,000 more students were participating in business-related programs of study compared to fall 1993 (Figure III.3). Enrollment in each of the broad career areas increased by more than 50 percent.

FIGURE III.3

NUMBER OF STUDENTS PARTICIPATING IN SPECIFIED CAREER CLUSTERS, FALL 1993 AND FALL 1994



[2]The increase in reports of Arts and Humanities programs of study may also be an artifact of a change in the questionnaire format; a response category for an Arts and Humanities cluster did not exist for the fall 1993 survey, but was added to the relevant questionnaire item for 1994, on the basis of the large number of responses written in by respondents.

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This increase reflects two phenomena. First, more consortia offered programs of study or career clusters in 1994 (574) than in 1993 (470). Second, consortia were including more students in these programs of study than in the previous year. The average number of students enrolled in each career area grew, with the exception of Agriculture. For example, in the business cluster, the average number of students per consortium increased from 408 in fall 1993 to 507 in fall 1994. Similarly, the average for the engineering/technology cluster increased from 171 to 199. The average in agriculture clusters dropped slightly, from 193 to 176.

CURRICULUM DEVELOPMENT, ARTICULATION, AND CAREER DEVELOPMENT

Our latest information on the implementation of new curricula, articulation agreements, and career development activities is based on a composite of data collected from the 1993 and 1994 surveys. As described in Chapter I, some survey questions, including questions on these topics, were eliminated from the fall 1994 questionnaire sent to most consortia. Responses on these topics from the 1993 survey were used to generate 1994 tabulations for the consortia that were responding to the survey in 1994 for the second time. Thus, the aggregate picture of the development and implementation of these Tech-Prep components in 1993 and in 1994 looks virtually the same.

A summary of major findings concerning these topics is presented below, based on the composite 1993 and 1994 data.[3]

Development of Academic and Vocational Curricula

- The development and implementation of applied curricula for Tech-Prep has been widespread--92 percent of consortia recently introduced applied academic curricula that had been either state- or locally-developed, or purchased from commercial vendors (1993 report, p. 93)

- Consortia rely somewhat more heavily on commercially available curricula than on those developed at the local or state level--87 percent of consortia purchased applied curricula compared to 78 percent that used curricula developed at the state or local level (1993 report, p. 93)

- New applied curricula are being implemented in a relatively small proportion of consortium secondary and postsecondary schools. For example, even in the subject area in which such curricula are most commonly used (math), new curricula were introduced recently in only 33 percent of the secondary schools in the 619 consortia (out of 867) that have implemented them (updated data in Table III.1; 1993 report, p. 94)

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[3]Where relevant, we refer to the updated statistics pertaining to these findings. Updated statistics incorporate new 1994 data for consortia responding to the survey for the first time in 1994.

TABLE III.1

RECENTLY INTRODUCED LOCALLY OR STATE-DEVELOPED APPLIED ACADEMIC CURRICULA

	Consortia		Secondary Schools		Postsecondary Schools	
Subject Area	Number	Percentage	Number	Percentage[a]	Number	Percentage[a]
Biology	365	42	1,083	11	66	5
Chemistry	294	34	838	9	58	5
Mathematics	619	71	3,186	33	223	18
Physics	418	48	1,368	14	111	9
English and Other Language Arts	512	59	2,365	24	162	13
Economics	66	8	168	2	8	1
History	34	4	102	1	6	0
Other	92	11	223	2	63	5
None	189	22	--	--	--	--

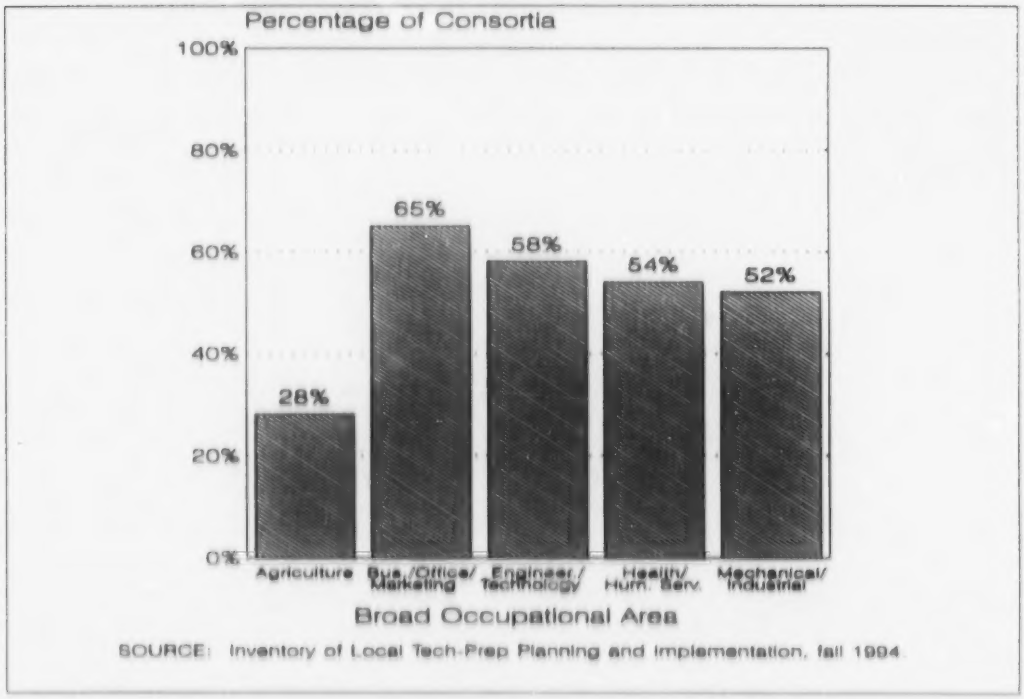
SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994.

[a]The denominators used in calculating the percentages are the sums of the reported number of secondary schools and community and technical colleges, respectively, in consortia implementing applied curricula in the specified subject area.

- Consortia have emphasized vocational-technical curriculum activity in the same occupational areas in which they offer career clusters (updated data in Figure III.4; 1993 report, p.97). Higher proportions of consortia introduced new or substantially revised vocational courses in the business, office skills and marketing cluster than in other occupational areas; this career cluster is also the most commonly implemented. In contrast, less attention has been focused on technical curriculum development related to agriculture or mechanical, industrial, practical arts and trade, two broad career clusters that are relatively less frequently offered by consortia.

FIGURE III.4

RECENT IMPLEMENTATION OF NEW OCCUPATIONAL-TECHNICAL CURRICULA AT SECONDARY LEVEL, BY CAREER AREA



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994

Articulation

- Many consortia already had signed articulation agreements between secondary and postsecondary members before the consortium was established--almost 60 percent of consortia had pre-Tech-Prep articulation agreements (1993 report, p. 99)

- Granting credit is the most common provision of articulation agreements--agreements in about 80 percent of consortia contain this specification (updated data in Table III.2; 1993 report, p. 103)

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TABLE III.2

EXTENT AND SCOPE OF ARTICULATION AGREEMENTS

	Entities with Articulation Agreements			
	Consortia		Postsecondary Institutions[a]	
Specific Articulation Agreement Provisions	Number	Percentage of Total	Number	Percentage of Total
Establishing Conditions for Granting Credit	605	81	923	53
Revising Postsecondary Courses	331	44	480	48
Revising Secondary Courses	410	55	617	51
Granting Advanced Standing in Apprenticeship	108	14	152	46
Providing Joint/Exchange Teaching	142	19	186	40
Defining Secondary/Postsecondary Course Sequences	440	59	681	51
Ensuring Tech-Prep Graduates Slots in Postsecondary Schools	201	27	272	43

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994.

NOTE: This table provides two alternative measures of the prevalence of particular provisions in articulation agreements. First, it shows how many *consortia* there are where agreements include each provision. Second, it shows how many *postsecondary institutions* are involved in agreements including each provision. The two differ largely because the number of postsecondary institutions in a consortium often exceeds one.

[a]The denominator used in calculating the percentage is the sum of the reported number of community and technical colleges, four-year colleges and universities, proprietary schools, and registered apprenticeship programs in each consortium reporting an agreement in the specified category.

- Survey responses suggest that articulation agreements in Tech-Prep consortia often focus on individual courses rather than on comprehensive course sequences that represent career clusters, as was desired and promoted by the Tech-Prep Education Act (1993 report, p. 104)

Career Development and Guidance

- The definition and delivery of career development remains largely a matter for individual districts and schools; specific career development approaches are infrequently adopted consortiumwide (1993 report, p. 105)

Although these results were generally consistent across both years of the survey, analysis of the data yielded further findings.

The newest consortia have further to go in implementing Tech-Prep than did the older consortia in their early years of development

The newest consortia are not as advanced as the older consortia were at a similar point in their Title IIIE grantee status--a year after receiving their first funding. Because many states awarded Title IIIE grants competitively, it is natural to expect that consortia receiving early grants were closer to implementing Tech-Prep than those that either applied for but did not receive an early grant or did not apply during the earlier round of funding. As part of a competitive process, state agencies would most likely have awarded early grants to the most advanced consortia.

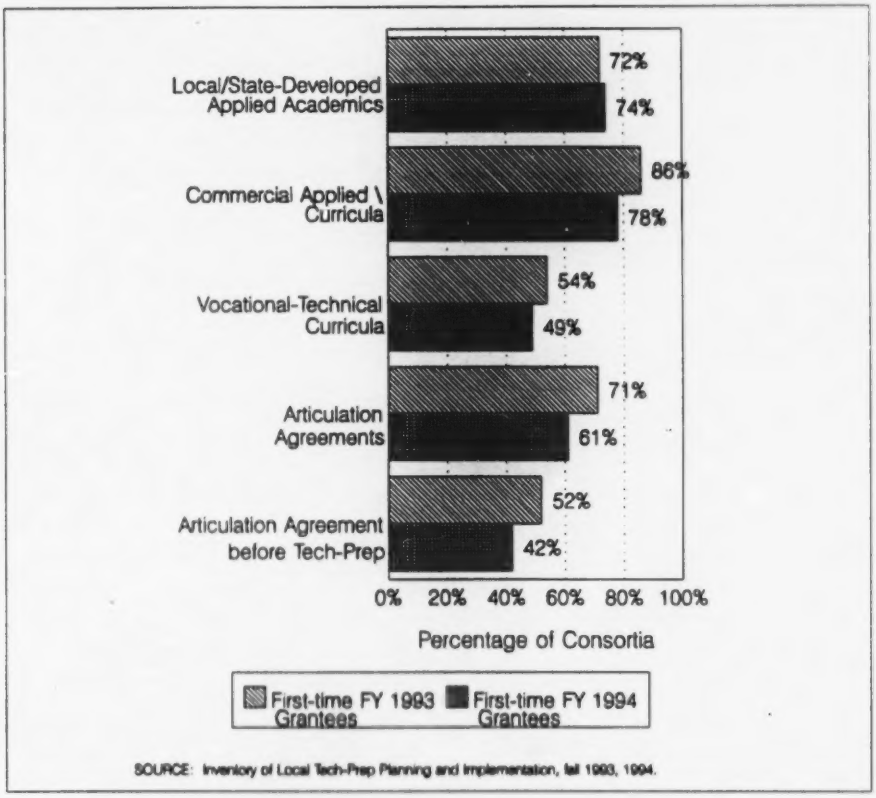
This expectation is borne out by the 1994 survey data. FY 1992 and FY 1993 grantees were more likely than FY 1994 grantees to have implemented new curricula or articulation agreements either before their first grant award or in the year immediately afterwards. For example, 52 percent of the consortia that received their first grant for FY 1993 had signed articulation agreements before the consortium was established, compared to 42 percent of the consortia that received their first grant for FY 1994 (Figure III.5). One year after their first grant award, FY 1993 grantees were more likely to have implemented new commercially available applied academic curricula, new or revised vocational-technical curricula, and new articulation agreements. Moreover, the FY 1994 grantees were implementing new curricula in a smaller proportion of schools, at the equivalent point in their Tech-Prep funding history than were the earlier grantees.

Apparent marginal declines in the aggregate status of some Tech-Prep components reflect both data constraints and the less advanced status of the new consortia

Implementation of new curricula, articulation agreements, and consortiumwide career development activities appear to have declined slightly, based on the combined 1993-1994 survey data. Comparing 1994 tabulations included in Table III.1, Figure III.4, and Table III.2, with comparable figures and tables based on the 1993 survey data (see 1993 report), suggests that the proportion of consortia and schools implementing these Tech-Prep elements decreased between 1993 and 1994.

FIGURE III.5

STATUS OF IMPLEMENTATION, MEASURED ONE YEAR AFTER FIRST TITLE IIIE GRANT



Two factors have contributed to the appearance of a regression in overall implementation of these particular Tech-Prep features--data constraints and the broadening base of the consortium population. Since 1993 survey responses are used in the 1994 estimates for nearly three-quarters of the sample, actual progress made by older consortia between 1993 and 1994 is not reflected in latest estimates.[4] In addition, the consortia that do not have the same data values for both the 1993 and 1994 survey data--primarily the new FY 1994 grantees--were less advanced in their implementation both when the consortia were formed and a year later, when they responded for the first time to the survey in fall 1994. Thus, when the data are aggregated, it appears that overall 1994 implementation status is lower than the 1993 estimates.[5]

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[4]See Chapter I for an explanation of why some questions were eliminated from the 1994 survey.

[5]In contrast, in tables and figures presented in this chapter on other Tech-Prep features, the 1994 estimates reflect reported progress of earlier grantees as well as the less advanced status of the new FY 1994 grantees.

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WORKPLACE OPPORTUNITIES

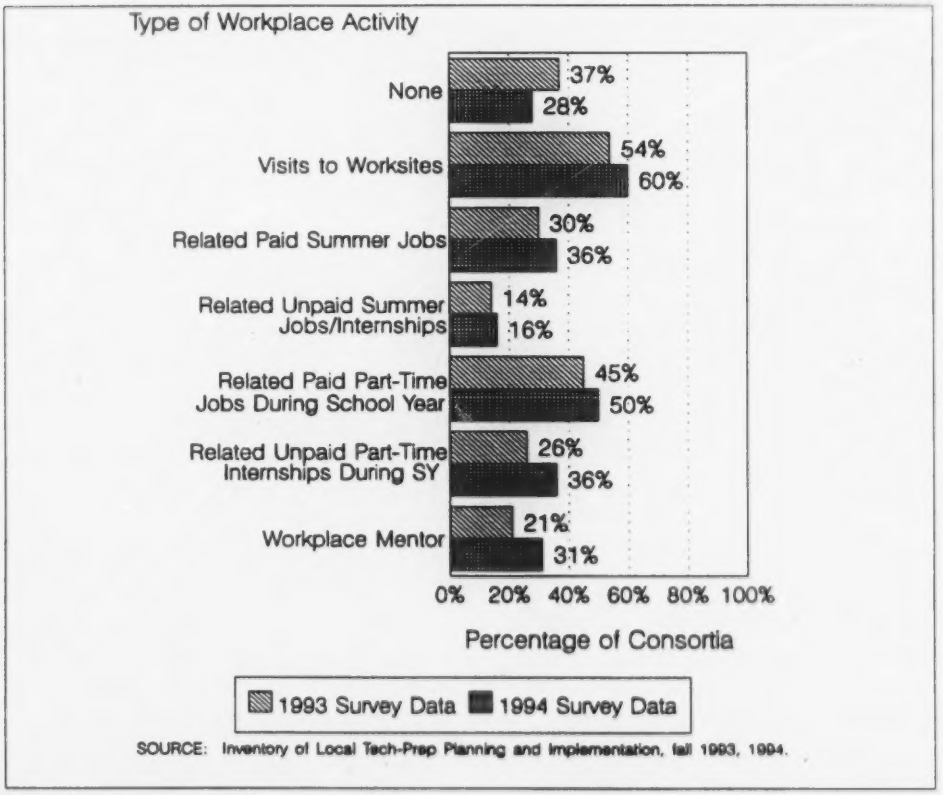
Although workplace activities are not a required element of Tech-Prep according to Title IIIE of the Perkins Act, consortium interest in offering these experiences has been growing. The availability of grants under the STWOA will probably encourage increasing numbers of Tech-Prep consortia to turn their attention to this component. Tracking the extent to which Tech-Prep consortia offer workplace opportunities provides a useful early measure of school-to-work implementation progress.

The availability of workplace experiences to Tech-Prep students has increased

A higher proportion of consortia made workplace activities possible for Tech-Prep students in 1994 than in 1993. In fall 1993, 63 percent of consortia reported making some type of workplace experience available to Tech-Prep students in at least one member district, compared to 72 percent in fall 1994 (Figure III.6). Among consortia that reported offering workplace activities in both 1993 and 1994, they did so in a somewhat higher proportion of their districts in 1994 (60 percent) than in 1993 (56 percent).

FIGURE III.6

AVAILABILITY OF DIFFERENT TYPES OF WORKPLACE EXPERIENCES TO TECH-PREP STUDENTS, FALL 1993 AND FALL 1994



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Older grantees were more likely to offer these experiences than more recent grantees, which suggests that implementing work-based activities may be a second stage of development for Tech-Prep consortia. For example, in 1994, 79 percent of consortia that received their first Title IIIE grant for FY 1992, 67 percent of first-time FY 1993 grantees, and 52 percent of new FY 1994 grantees reported making some kind of workplace experience available to Tech-Prep students in at least one district.

All types of workplace activities have become more widely available

Expansion of workplace opportunities for Tech-Prep students has occurred across all types of activities. Availability of each type of workplace activity rose by more than five percentage points, with the exception of related unpaid summer jobs, the least common workplace experiences offered by Tech-Prep consortia (Figure III.6). The two categories with the greatest increases were school-year internships (up 10 percentage points) and assignment to workplace mentors (also up 10 percentage points). For each type of activity, the overall expansion was due to increased availability among the older grantees in the year between 1993 and 1994.

Workplace activities are still not a core part of the Tech-Prep experience

Although many consortia make workplace opportunities available to Tech-Prep students, few actually require Tech-Prep students to participate in them. Of the 579 consortia that made any type of workplace activity available in 1994, only 205 (35 percent) considered participation in these activities a part of the core Tech-Prep program. Only one quarter of consortia that offer paid related summer or school-year employment made these experiences a requirement for Tech-Prep students.

PROMOTION AND STAFF DEVELOPMENT

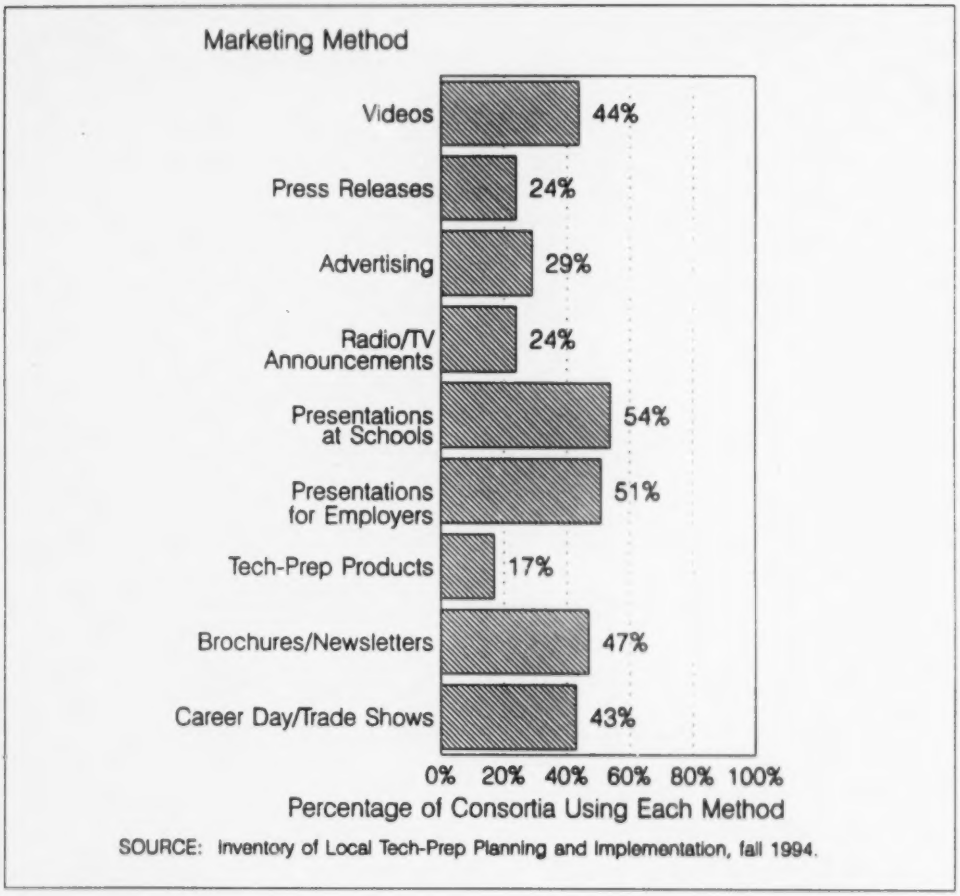
Promotion and staff development are critical aspects of Tech-Prep in both the planning stages and during ongoing implementation. Marketing the initiative to students, parents, school staff, and the business community is an important factor in the probable success of these reforms. Helping staff understand how to implement the reforms is equally important if Tech-Prep is to improve student outcomes. Approaches to promotion and staff development may evolve over time, as Tech-Prep initiatives become more widely accepted and institutionalized.

Consortia used the same marketing methods in 1994 as in 1993

Consortium efforts to promote interest in and acceptance of Tech-Prep relied on the same strategies in 1994 as in 1993. Virtually identical proportions of consortia used and rated each marketing method as highly effective in 1994 as in 1993. Presentations at school remained the most effective method of Tech-Prep promotion and were used by the most consortia, followed closely by presentations to employers (Figure III.7).

FIGURE III.7

MARKETING METHODS RATED AS VERY EFFECTIVE
BY TECH-PREP CONSORTIA IN FALL 1994



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994.

Fewer consortia are focusing on "introduction" topics in their staff development activities

More consortia have moved beyond staff development training on the basic concepts of Tech-Prep and how to market it. In 1994, 58 percent of consortia emphasized general concepts of Tech-Prep, compared to more than 70 percent of consortia in 1993 (Figure III.8). Only one-third of consortia in 1994 were concentrating staff development activities on marketing strategies, compared to more than 40 percent a year earlier. Similarly, a smaller proportion of consortia were focusing on general secondary-postsecondary cooperation in 1994 than in 1993. Older grantees were less likely to emphasize these staff development topics than were newer grantees.

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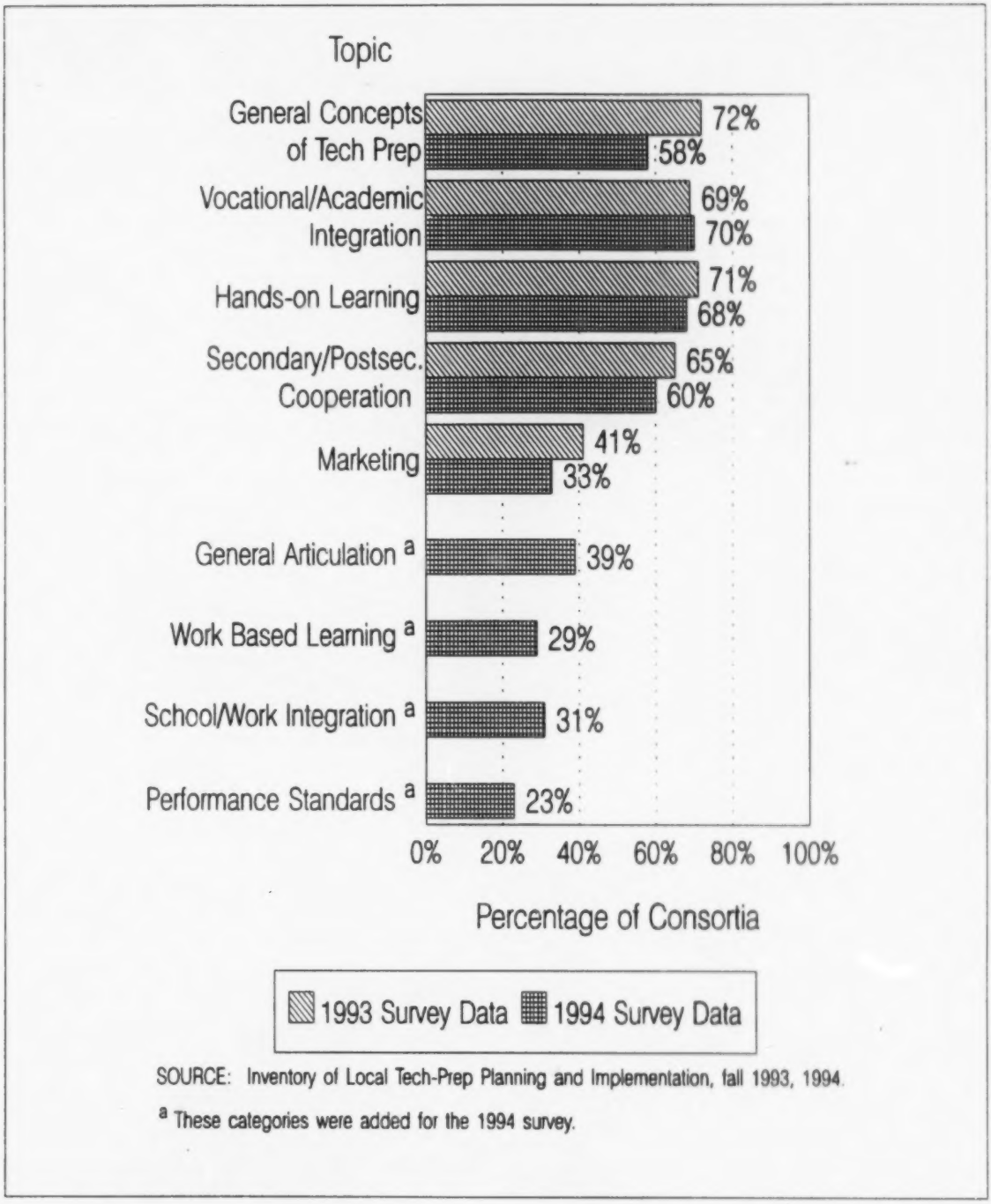
FIGURE III.8

MOST HIGHLY EMPHASIZED STAFF DEVELOPMENT TOPICS, FALL 1993 AND FALL 1994



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994.

[a] These categories were added for the 1994 survey.

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It seems likely that as consortia continue to gain implementation experience, staff development will shift towards specific components of the Tech-Prep model and to school-to-work topics that may be unfamiliar to educators. For example, consortia in 1994 were more likely to emphasize--either highly or somewhat--training on integration of academic and vocational learning than were consortia in 1993. Although a relatively small proportion of consortia focused on work-based learning or the integration of school- and work-based learning in 1994, results from the fall 1995 survey may well show increasing attention to these issues.[6]

[6]Several response categories pertaining to school-to-work topics were added to the survey questionnaire beginning in 1994. No comparable data on these topics is available for 1993.

IV. STUDENT PARTICIPATION AND OUTCOMES

Student participation and outcomes are important measures of implementation progress and potential program effects. Tech-Prep has come to describe a variety of approaches to education reform, however. Whether students can be identified as Tech-Prep participants, and which ones are so identified, varies as much as program features. This section examines how consortia define who is a Tech-Prep student, consortium capacity to report on Tech-Prep enrollment, reported numbers of Tech-Prep participants, and outcomes for these students.

Figure IV.1 summarizes the number of consortia reporting and the number of Tech-Prep students achieving each outcome in SY 1992-1993 and SY 1993-1994. As one reads down the chart, the declining numbers reflect not only the different stages of consortium development, but also difficulties in tracking and reporting student participation and outcomes. Consortia generally were able to report on participation in more of their member districts than they could on outcomes, such as postsecondary entry.

The increasing numbers as one reads from left to right across the boxes in Figure IV.1--showing growth in levels of participation and outcomes between 1993 and 1994--also reflect a combination of factors. First, more consortia were in existence in 1994 than in 1993, expanding the pool of potential Tech-Prep students. Second, a higher proportion of consortia in 1994 were able to report numbers of Tech-Prep students and their achievements. This increase is partly the result of an additional year of development and the movement of more students into Tech-Prep programs and along a path towards graduation and postsecondary activities. However, the higher proportion of consortia documenting student participation and outcomes may also be in large measure a function of improved reporting systems--computers or procedures that help in tracking students, rather than a true increase in student participation or outcomes. Finally, consortia that reported student data in 1993 are reporting for 1994 higher numbers of students enrolled in the programs and achieving different outcomes. These increases may indicate that the true number of students is actually growing, that more districts or schools in those consortia can provide information about their Tech-Prep participants, or some combination of these two shifts.

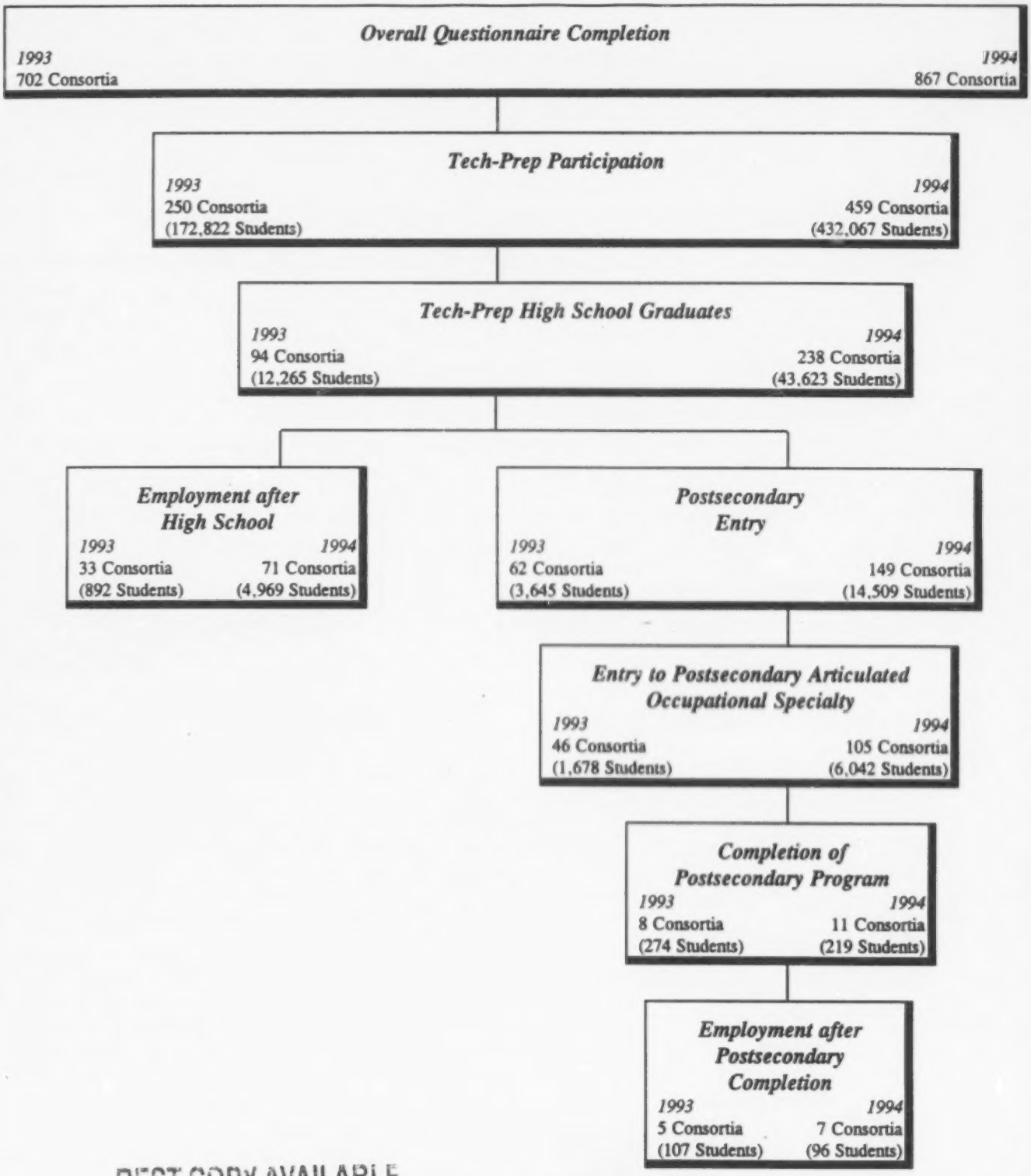
The true relative influence of these factors affects our interpretation of the second year survey data. Their relative contribution to observed changes determine whether reported growth reflects true increases in enrollments or outcomes, or simply better ability to report enrollments and outcomes. Unfortunately, we are rarely able to sort out with confidence which factor has played the largest role. Improvements in reporting capacity are likely to have some effect, however. Thus simple computation of growth rates probably overestimates the true increases and should be interpreted cautiously.

DEFINING TECH-PREP PARTICIPATION

Developing an explicit definition of which students are to be considered "in Tech-Prep" allows consortia to count and report on Tech-Prep students. The ability to define Tech-Prep participation depends largely on how the program is organized, however. Consortia that view Tech-Prep as a distinct and cohesive program with a required set of activities are more likely to be able to identify which students are participating. When Tech-Prep is not considered a program, consortia may make components broadly available and students participate in these components at different points and different levels of intensity; these consortia are likely to find it more difficult to identify which students are in Tech-Prep at any given

FIGURE IV.1

SUMMARY OF RESPONSES FOR KEY OUTCOMES IN 1993 AND 1994



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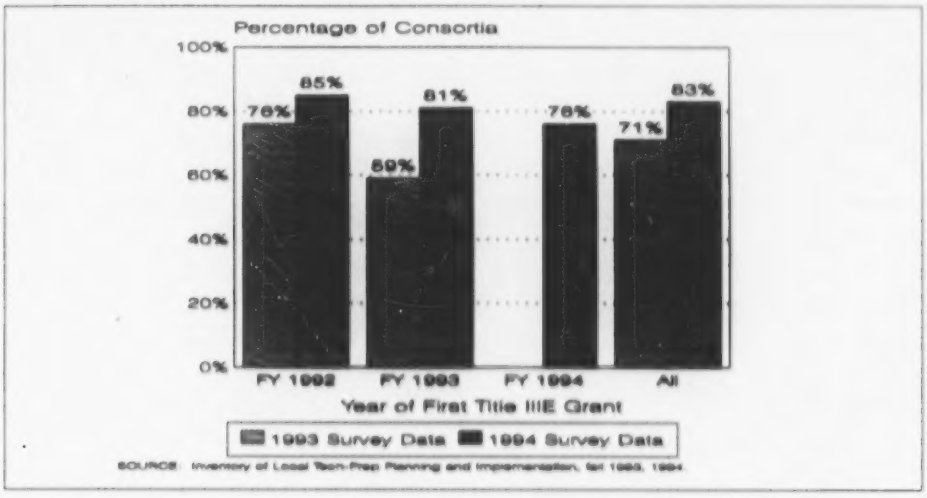
time. Approaches to defining Tech-Prep participation may also change over time, as consortia introduce additional components and gain greater implementation experience.

Many more consortia reported a definition of Tech-Prep participation in 1994 than in 1993

Consortia are increasingly able to state the basis on which they identify Tech-Prep students (Figure IV.2). In 1994, 83 percent of survey respondents were able to report a definition of Tech-Prep participation, compared to 71 percent of respondents in 1993. Higher proportions of both FY 1992 and FY 1993 grantees reported having a definition in 1994 than did in 1993. Moreover, new FY 1994 grantees reported definitions one year after their first grant at a much higher rate than did FY 1993 grantees.

FIGURE IV.2

PERCENTAGE OF CONSORTIA REPORTING A DEFINITION OF TECH-PREP PARTICIPATION IN 1993 AND 1994, BY YEAR OF FIRST TITLE IIIE GRANT



Four factors have contributed to the increased reporting of a Tech-Prep participation definition. First, consortia that were in the 1993 survey sample (FY 1992 and FY 1993 grantees) have had an additional year to develop and implement their program components, bringing them closer to enrolling students and understanding what it is that will make these students "in Tech-Prep."

Second, during the 1993-1994 school year, many state administering agencies developed a more formal definition of a Tech-Prep student and/or made stronger demands on their local consortia to begin collecting data on Tech-Prep participation. In fact, 56 percent of all 1994 respondents reported that the state had provided a definition of participation, compared to only 41 percent of 1993 respondents.

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Third, the initial Tech-Prep survey in fall 1993 underscored for local consortium coordinators federal interest in the number of Tech-Prep participants, and provided a useful structure for thinking about local program design and how to identify Tech-Prep students.[1] Although the first survey may have prompted discussions about definitions, it was probably not until the second survey that many consortia were able to have formulated a definition.

Finally, rumors of the elimination of separate Title IIIE funding from federal budgets may have mobilized local coordinators to seek ways to document their efforts and the numbers of students being affected. In letters to consortium coordinators to encourage their completion of the survey, many state Tech-Prep coordinators emphasized that reporting numbers of participants could affect the longevity of Tech-Prep funding.

Consortia continue to rely on the traditional elements of Tech-Prep in defining participation

As before, consortia emphasize four criteria in identifying which students are "in Tech-Prep." These criteria include: (1) whether a student has explicitly chosen Tech-Prep as a pathway or program; (2) whether a student has developed an educational plan indicating a course sequence across the secondary and postsecondary levels; (3) whether a student takes or completes one or more vocational courses; and (4) whether a student takes or completes one or more applied academic courses. Approximately two-thirds of consortia in both 1993 and 1994 reported including each of these criteria in their definitions (Figure IV.3). In 1994, about 20 percent of the consortia reporting any definition reported including all four criteria.

For some consortia, stated definitions of participation remain a goal and do not reflect current program features. A small number of consortia in 1994 reported including participation in a workplace experience as a criterion for defining Tech-Prep students.[2] The extent to which this criterion is actually applied is unclear, however. Twenty-one percent of those consortia indicated in response to another question that they do not currently make workplace experiences available to Tech-Prep students and 42 percent do not include worksite activities as part of their core Tech-Prep program. Among consortia that reported student selection of Tech-Prep as a pathway or major as a definition criterion, only half reported in another question that they currently have students make an explicit choice between Tech-Prep and other programs of study in at least one member district.

Some consortia chose not to identify a participant according to components of Tech-Prep, but have a broader definition of who is "in Tech-Prep." Virtually identical proportions of consortia in 1993 and 1994 reported considering either all secondary students who had *not* chosen a college-prep path (just under 10 percent) or all secondary students *including* those who had chosen college prep (about 7 percent) to be Tech-Prep participants.

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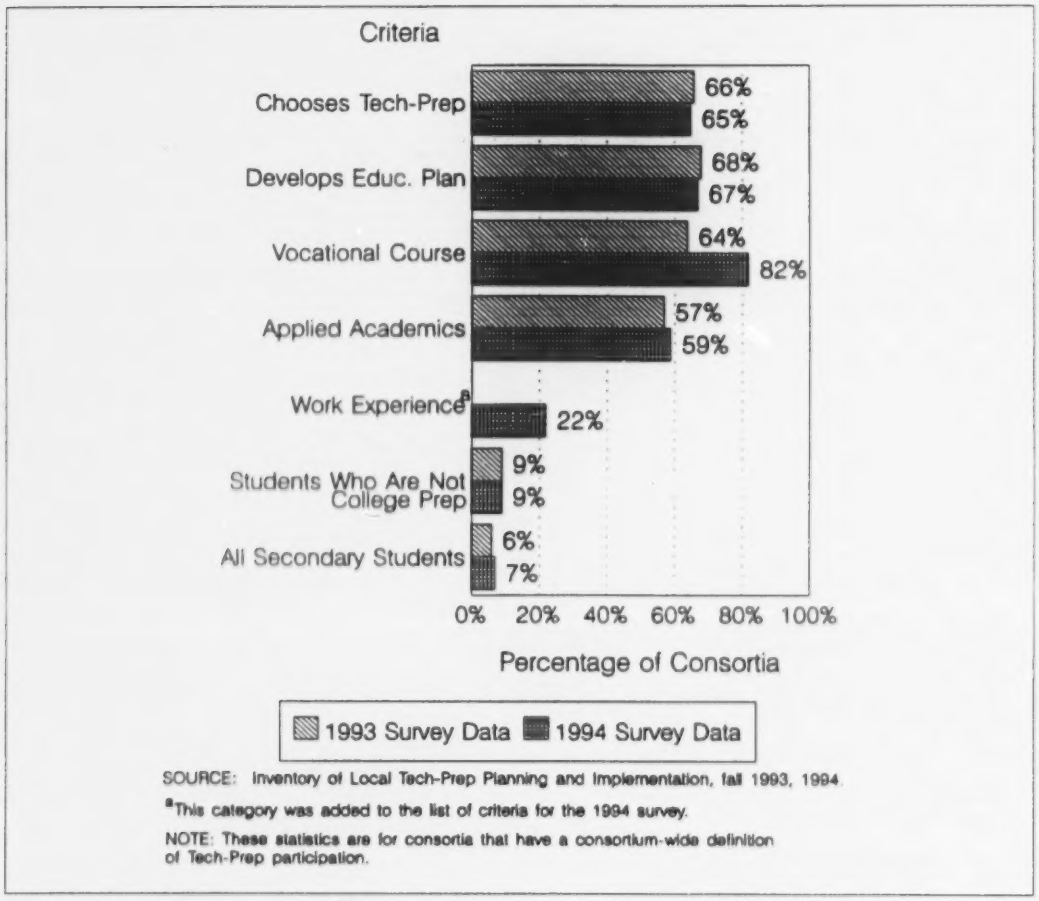
[1]For example, several consortium coordinators told MPR staff that receiving the survey questionnaire in 1993 forced them to think about how to identify a Tech-Prep student for the first time.

[2]A response category for work experience as a definition criteria was added to the questionnaire for the fall 1994 survey.

FIGURE IV.3

PERCENTAGE OF CONSORTIA REPORTING SPECIFIED CRITERIA FOR DEFINING TECH-PREP PARTICIPATION IN 1993 AND 1994



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994.

[a]This category was added to the list of criteria for the 1994 survey.

NOTE: These statistics are for consortia that have a consortium-wide definition of Tech-Prep participation.

REPORTED PARTICIPATION

Increases in the number of Tech-Prep participants provides some evidence of progress in Tech-Prep implementation. However, some consortia that have developed a definition for participation cannot report numbers of Tech-Prep students, either because they have not yet enrolled students or because they are unable to assemble enrollment data from member schools. Other consortia report enrollments but not the basis on which they identify students as in "Tech-Prep." Both the capacity to report on participation and the numbers of students participating appear to be increasing over time, as consortia more fully develop their programs and their ability to collect student information.

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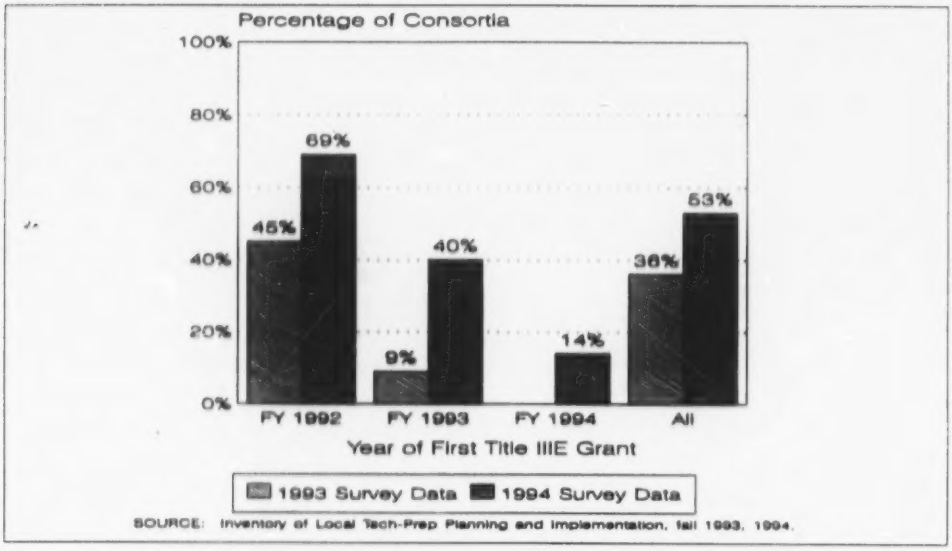
Ability to report on Tech-Prep enrollment has expanded

Consortia have become more successful in developing Tech-Prep student reporting capacity (Figure IV.4). In fall 1993, 36 percent of survey respondents (250 consortia) were able to identify and count students participating in Tech-Prep the previous year (school year 1992-1993); in fall 1994, 53 percent of survey respondents (459 consortia) were able to report the number of Tech-Prep students participating in the previous year (school year 1993-1994). This increase in reporting capacity reflects two factors. First, a higher proportion of the 1993 survey respondents (FY 1992 and FY 1993 grantees) were able to measure participation in 1994. Second, the new FY 1994 grantees could report Tech-Prep enrollment at a higher rate than could new grantees in the earlier 1993 survey. Both years of survey data suggest that older consortia are more likely to be able to identify Tech-Prep students.

FIGURE IV.4

PERCENTAGE OF CONSORTIA THAT REPORTED TECH-PREP PARTICIPATION IN SY 1992-1993 AND SY 1993-1994, BY YEAR OF FIRST GRANT



Not only can more consortia report on Tech-Prep participation, but they can do so for more of their member districts. Findings from the fall 1993 survey indicated that reporting capacity in most consortia was limited to a small proportion of their districts. Although the 1994 survey data confirms this finding, the proportion of consortium districts that report Tech-Prep student counts has increased. In 1993, the 36 percent of consortia nationwide that could report student participation could do so for only 17 percent of their districts. By 1994, 53 percent of consortia and 29 percent of their districts were able to identify the number of Tech-Prep participants (Table IV.1). The proportion of consortia and secondary districts that can report student enrollment varied significantly across states in both years of the survey. In all but six states, reporting capacity increased between 1993 and 1994, however.

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TABLE IV.1

PERCENTAGE OF TECH-PREP CONSORTIA AND THEIR DISTRICTS THAT REPORTED STUDENT PARTICIPATION IN SY 1992-1993 AND SY 1993-1994, BY STATE

State	Percentage of 1993 Survey Respondents that Reported on SY 1992-1993 Participation		Percentage of 1994 Survey Respondents that Reported on SY 1993-1994 Participation	
	Consortia	Districts	Consortia	Districts
Alabama	52	31	76	56
Alaska	0	0	50	50
Arizona	40	30	60	52
Arkansas	62	29	88	33
California	2	1	27	15
Colorado	23	5	30	11
Connecticut	56	40	64	38
Delaware	0	0	100	100
District of Columbia	100	100	100	100
Florida	56	39	57	51
Georgia	30	23	43	36
Hawaii	0	0	100	100
Idaho	0	0	67	10
Illinois	32	13	68	22
Indiana	62	14	80	41
Iowa	60	17	30	8
Kansas	33	10	57	9
Kentucky	34	26	38	32
Louisiana	42	36	38	27
Maine	17	8	50	4
Maryland	53	44	69	54
Massachusetts	67	51	91	58
Michigan	19	11	36	22
Minnesota	17	3	64	32
Mississippi	7	4	33	33
Missouri	0	0	33	13
Montana	33	5	33	2
Nebraska	83	30	83	59
Nevada	100	33	67	56
New Hampshire	0	0	0	0
New Jersey	53	30	85	41
New Mexico	60	45	77	49

TABLE IV.1 *(continued)*

State	Percentage of 1993 Survey Respondents that Reported on SY 1992-1993 Participation		Percentage of 1994 Survey Respondents that Reported on SY 1993-1994 Participation	
	Consortia	Districts	Consortia	Districts
New York	46	34	70	43
North Carolina	55	54	76	77
North Dakota	0	0	0	0
Ohio	0	0	25	13
Oklahoma	40	9	60	38
Oregon	57	61	50	61
Pennsylvania	28	9	40	24
Rhode Island	100	100	100	100
South Carolina	63	73	81	81
South Dakota	0	0	25	16
Tennessee	71	54	100	87
Texas	52	14	71	32
Utah	38	20	67	38
Vermont	25	9	67	37
Virginia	10	2	40	18
Washington	7	4	45	15
West Virginia	36	16	54	56
Wisconsin	42	12	19	9
Wyoming	33	33	80	53
Puerto Rico	100	100	100	100
Virgin Islands	0	0	0	0
Total	**36**	**17**	**53**	**29**

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994.

Reported levels of Tech-Prep participation increased substantially between SY 1992-1993 and SY 1993-1994

More than 432,000 students were identified as Tech-Prep participants during the 1993-1994 school year, as reported by 1994 survey respondents. This total represents a 150 percent increase over the 172,882 students reported as SY 1992-1993 Tech-Prep participants. In both years, the total includes students identified under a variety of local definitions of Tech-Prep participation.

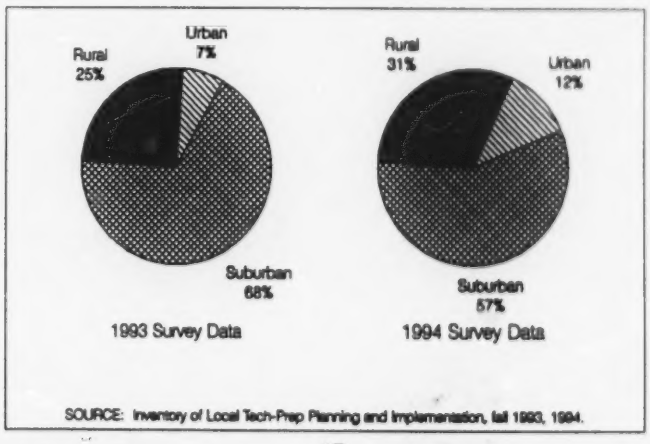
The increase in reported enrollment reflects two facts: more consortia enrolled Tech-Prep students and more consortia were able to document how many Tech-Prep students they have. Reporting capacity among 1993 respondents expanded (Figure IV.4). In fall 1993, 250 FY 1992 and FY 1993 grantees could report enrollments, but in fall 1994, 443 could report on enrollments. Moreover, consortia could report counts of students in more of their member districts in 1994. However, among consortia that responded in both years and reported counts of students for the *same number* of districts and schools in each year, the growth rate in participation levels was closer to 50 percent. This suggests that the true increase in participation is probably lower than the 150 percent reported for the overall survey samples.

Increases in urban and rural Tech-Prep participation were more pronounced than in suburban areas

The share of reported Tech-Prep participants in primarily urban and rural consortia increased between SY 1992-1993 and SY 1993-1994 (Figure IV.5). Although the absolute numbers of Tech-Prep students increased in all types of locales, participation in urban and rural areas expanded proportionally more than did participation in suburban areas. In SY 1992-1993, only 7 percent of reported Tech-Prep students were enrolled in consortia located in primarily urban communities; by SY 1993-1994 more than 12 percent of all Tech-Prep participants were in urban consortia. Similarly, a larger share of Tech-Prep participants was reported in rural consortia in SY 1993-1994 than in the previous year.

FIGURE IV.5

DISTRIBUTION OF REPORTED TECH-PREP STUDENTS IN SY 1992-1993 AND SY 1993-1994, BY METROPOLITAN STATUS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994.

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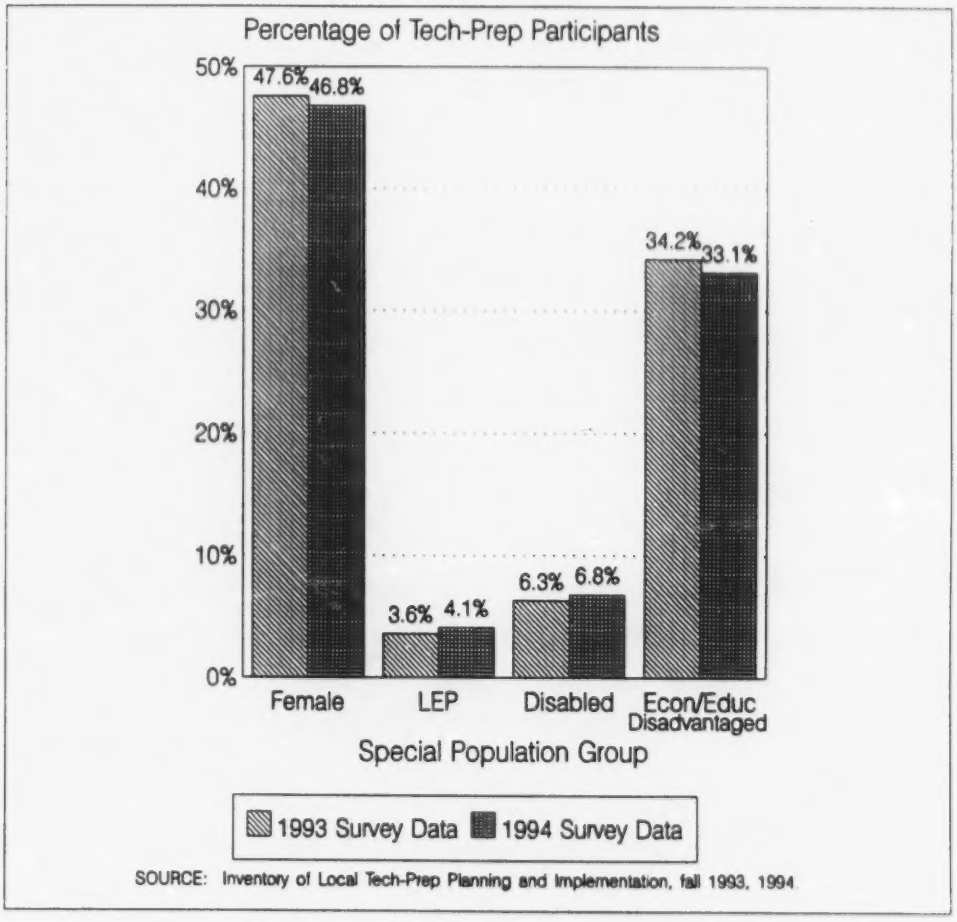
Observed participation of females and members of special populations were similar in both SY 1992-1993 and SY 1993-1994

Some demographic and socioeconomic characteristics of Tech-Prep participants remained unchanged across the two years of the survey. Consortium coordinators estimated that just under half of all Tech-Prep students in both SY 1992-1993 and SY 1993-1994 were female and about one-third were economically or educationally disadvantaged (Figure IV.6). In both years, reported percentages of Tech-Prep students with limited English proficiency (LEP) and with disabilities were also virtually identical. Even when these characteristics were examined for the sample of consortia that reported participation in both years for the same number of districts and schools, there was little difference between SY 1992-1993 and SY 1993-1994.

FIGURE IV.6

PERCENTAGE OF TECH-PREP PARTICIPANTS REPORTED TO BE FEMALE OR MEMBERS OF SPECIAL POPULATION GROUPS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994

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Reported Tech-Prep students represent a growing, but still very small share of the secondary school population

Tech-Prep consortia appear to have enrolled a greater proportion of the total secondary student population in 1994 than in 1993, although Tech-Prep students still represent only a fraction of all high school students. In consortia that reported participation in 1994, Tech-Prep students represented 7.1 percent of all secondary students in their member districts (Table IV.2). A year earlier, Tech-Prep students represented only 4.7 percent of secondary students in reporting consortia's districts.[3]

Despite this growth, student participation in Tech-Prep reforms is still far less than participation in vocational education programs. Most high school students earn some credits in vocational education; approximately 30 percent are considered vocational students, having earned at least three credits in one vocational program area (National Assessment of Vocational Education 1994). Thus, Tech-Prep initiatives appear to be reaching fewer than one-quarter the number of students involved in traditional vocational education programs. Among the more than 350 consortia that reported not only the number of Tech-Prep students but also the overall number of students taking one or more vocational courses in schools with Tech-Prep participants, Tech-Prep students represented about 30 percent of the vocational students in each grade level.

The racial/ethnic composition of Tech-Prep students is similar to that of the overall U.S. student population, but different from the distribution of students in Tech-Prep districts

Estimates provided by consortium coordinators of the racial/ethnic identity of Tech-Prep students suggest that these students are generally representative of all students across the country on this demographic characteristic. Like the overall secondary student population in the United States, close to 70 percent of Tech-Prep participants in 1994 were estimated to be white, just under 20 percent were black, approximately 10 percent were Hispanic, about 2 percent were Asian/Pacific Islander, and 1 percent were Native American (Figure IV.7).

However, the racial/ethnic distribution of Tech-Prep students in both 1993 and 1994 was different from that of other students in their school districts. The overall student body in Tech-Prep districts is less likely to be white and more likely to be from minority racial/ethnic groups (particularly Hispanic) than are students identified as participating in Tech-Prep initiatives. This disparity exists even in urban consortia and in single-district consortia. For example, among the 102 consortia that include one secondary district and report counts of students, only one third of all students in those participating districts were white, while more than two-thirds of reported Tech-Prep students were white. Neither the greater representation of urban districts in Tech-Prep consortia nor the possibilityof uneven reporting across consortium districts seem plausible explanations for the disproportionate enrollment of white students into Tech-Prep programs.

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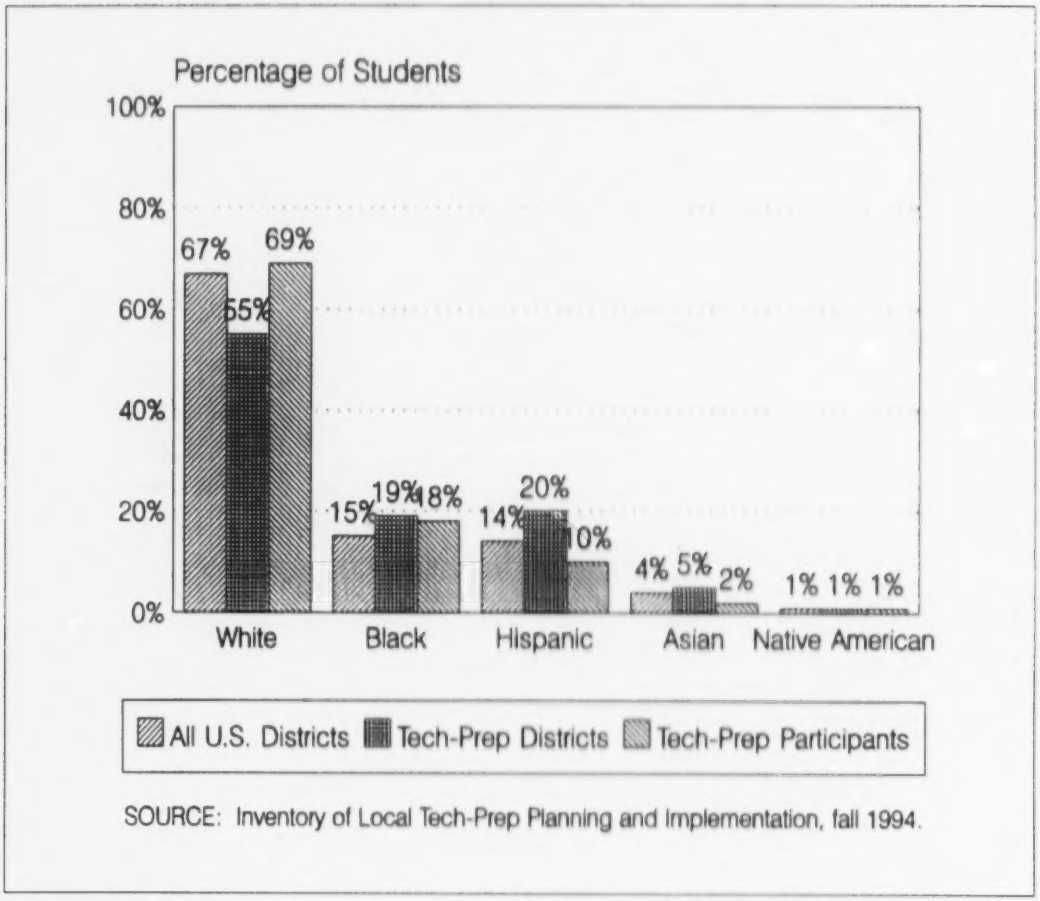
[3]These figures could be regarded as upper-bound estimates of the proportion of all secondary students in consortium districts who were involved in Tech-Prep, if we assume that consortia that did not report on participation had students involved at comparable rates but were simply unable to collect participation data. A lower-bound estimate of participation, alternatively, can be based on the assumption that consortia which did not report on participation had not yet begun to identify and count Tech-Prep students. Under this assumption, in 1994 Tech-Prep students represented approximately five percent of all secondary students in districts that are part of Tech-Prep consortia. The lower-bound estimate for 1993 was two percent.

FIGURE IV.7

PERCENTAGE OF SECONDARY STUDENTS IN ALL U.S. DISTRICTS, TECH-PREP DISRICTS, AND TECH-PREP PROGRAMS, BY RACE/ETHNICITY



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994.

Several factors may be contributing to the greater participation of white students in Tech-Prep relative to other students in the same districts. One possible explanation might be the reluctance of minority families to allow their children to participate in vocationally oriented programs such as Tech-Prep, which are often perceived as "dead end" education tracks. However, the survey data suggest the greatest racial disparity in Tech-Prep participation affects Hispanic students; although 20 percent of students in Tech-Prep districts are of Hispanic origin, only 10 percent of Tech-Prep participants are Hispanic. Another hypothesis for the underrepresentation of Hispanic Tech-Prep students in Tech-Prep districts may be that limited English proficiency is a barrier to participation in technology education, an emphasis of many Tech-Prep programs.

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TABLE IV.2

REPORTED SY 1993-1994 TECH-PREP PARTICIPATION AS A SHARE OF ALL SECONDARY STUDENTS, BY STATE

State	Total Number of Tech-Prep Secondary Students	Percentage of Consortia Reporting Participation	Tech-Prep Students as a Percentage of All Secondary Students in Reporting Consortia
Alabama	15,204	76	10
Alaska	1,048	50	37
Arizona	16,995	60	15
Arkansas	2,311	88	9
California	13,379	27	3
Colorado	589	30	1
Connecticut	1,696	64	2
Delaware	1,132	100	6
District of Columbia	140	100	1
Florida	12,877	57	5
Georgia	11,099	43	10
Hawaii	346	100	1
Idaho	70	67	0
Illinois	6,068	68	2
Indiana	22,228	80	11
Iowa	477	30	3
Kansas	568	57	3
Kentucky	11,169	38	21
Louisiana	9,213	38	13
Maine	963	50	4
Maryland	16,021	69	12
Massachusetts	5,410	91	4
Michigan	26,765	36	19
Minnesota	17,044	64	26
Mississippi	5,028	33	12
Missouri	792	33	1
Montana	35	33	1
Nebraska	8,420	83	20
Nevada	1,230	67	8
New Hampshire	0	0	--
New Jersey	9,620	85	5
New Mexico	7,316	77	12
New York	6,531	70	1
North Carolina	38,164	76	23
North Dakota	0	0	--

TABLE IV.2 *(continued)*

State	Total Number of Tech-Prep Secondary Students	Percentage of Consortia Reporting Participation	Tech-Prep Students as a Percentage of All Secondary Students in Reporting Consortia
Ohio	983	25	1
Oklahoma	789	60	3
Oregon	12,866	50	16
Pennsylvania	9,431	40	10
Rhode Island	1,452	100	6
South Carolina	42,949	81	30
South Dakota	306	25	6
Tennessee	33,173	100	13
Texas	38,864	71	6
Utah	3,335	67	4
Vermont	106	67	9
Virginia	2,939	40	2
Washington	2,203	45	2
West Virginia	3,893	54	8
Wisconsin	4,566	19	8
Wyoming	3,762	80	24
Puerto Rico	502	100	0
Virgin Islands	0	0	--
Total	**432,067**	**53**	**7.1**

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994.

NOTE: Two dashes (--) indicate no Tech-Prep students were reported by consortia in the state; thus a percentage of all students in reporting consortia could not be computed.

STUDENT OUTCOMES

Reports on Tech-Prep students' progress are of considerable interest to both practitioners and policymakers. Many consortia are still in the early stages of program planning and implementation, however, and cannot yet report on student outcomes. Only about half of consortia in fall 1994 could document the number of participants in the previous school year; clearly, consortia that could not identify and count participants would be unable to report the number of Tech-Prep students achieving key outcomes. Thus, computed rates of Tech-Prep students' transitions to postsecondary activities remain based on a small subset of all consortia.

Tracking outcomes for Tech-Prep students remains a substantial challenge in many consortia

Although an increasing proportion of consortia are able to report on Tech-Prep participation, many still do not have the capacity to document student progress. Of the approximate 450 consortia that reported 12th grade Tech-Prep enrollments, nearly half could not report how many of these students had graduated from high school. Among consortia that reported high school graduates, they could do so in only about three-quarters of the districts for which they could count Tech-Prep participants and only 41 percent of their member districts overall.

Once students leave secondary school, data collection continues to be difficult. In 78 of the 238 consortia that reported high school graduates, coordinators could not report what happened to those students after graduation. These difficulties probably reflect both the newness of Tech-Prep initiatives and the lack of systems to collect data across secondary and postsecondary educational institutions or from employer wage reports.

Consortia are reporting higher numbers of Tech-Prep high school graduates

More than 43,000 Tech-Prep students in 238 consortia graduated from high school in spring 1994 (Figure IV.1). This number represents a substantial increase over the approximately 12,000 spring 1993 graduates reported by 94 consortia last year. The average number of Tech-Prep high school graduates in each reporting consortium also increased--from 130 in spring 1993 to 183 in spring 1994. Substantial growth was observed even when attempts were made to eliminate potential bias due to differences in reporting capacity.[4]

It is clear from the survey data that Tech-Prep participants generally graduate from high school. The proportion of reported seniors who graduated increased between 1993 and 1994. The 43,623 spring 1994 Tech-Prep graduates represent 75 percent of the reported Tech-Prep seniors in those 238 consortia; the comparable figure was 64 percent for Tech-Prep seniors graduating in spring 1993.

The 75 percent figure (and the 64 percent figure in the previous year) are clearly lower-bound estimates, however, and should not be regarded as estimates of actual graduation rates. In 1994,

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[4]However, for consortia that could report in both 1993 and 1994 for the same number of districts, the computed growth in number of Tech-Prep graduates was about 50 percent, not the 250 percent increase observed for the 1993 and 1994 respondents as a whole.

consortium coordinators could report counts of Tech-Prep high school graduates for only 890 of the 1,156 districts for which they could report counts of Tech-Prep participants. The 75 percent would be an accurate estimate of the proportion of Tech-Prep seniors that graduate from high school only if we made the improbable assumption that the 266 non-reporting districts did not have any Tech-Prep graduates. It is virtually certain that many of these non-reporting districts with Tech-Prep participants graduated Tech-Prep seniors since, nationally, more than 90 percent of all seniors graduate.[5] Consortium coordinators may simply have been unable to collect data on graduates for those 266 districts.

An alternative estimate of the proportion of Tech-Prep seniors that graduate would include some measure of the number of graduates in districts that could not report them, but could report the number of seniors. One adjusted estimate is 97 percent[6]. This estimate assumes that the 266 non-reporting districts had the same proportionate number of graduates, on average, as the 890 reporting districts.

Postsecondary education or training is pursued by many more Tech-Prep high school graduates

The number of Tech-Prep students reported as entering postsecondary activities increased substantially between 1993 and 1994, largely because more consortia are able to report on Tech-Prep participation. Still, only a small subset of consortia could document these student transitions. In 1993, 62 consortia reported that 3,551 Tech-Prep high school graduates entered postsecondary education institutions or programs that fall. In comparison, the 149 consortia that could track postsecondary entry of 1994 Tech-Prep graduates reported a total of 14,509 high school graduates beginning postsecondary activities in fall 1994 (Figure IV.8).

A higher *proportion* of students may also be entering postsecondary education or training. The 14,509 postsecondary students in 1994 represent 56 percent of the Tech-Prep students who graduated from high schools in those consortia in spring 1994. The comparable postsecondary entry rate of 1993 Tech-Prep graduates was computed to be 49 percent. It is important to interpret these data with some caution, however. Consortia that were able to report on postsecondary activities of Tech-Prep students in fall 1993 and fall 1994 make up a small portion of consortia overall (9 percent and 17 percent, respectively). However, consortia that were able to track postsecondary entry of Tech-Prep students claimed to be able to do so in virtually all of the districts in which they could track students' graduation from high school. Therefore, reports on postsecondary entry should not be biased by missing districts.

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[5]This figure was computed using data from the NCES Common Core database.

[6]This figure was computed by dividing the computed proportion--75 percent--by the proportion of districts that could report on graduation (890 of 1,156, or 77 percent).

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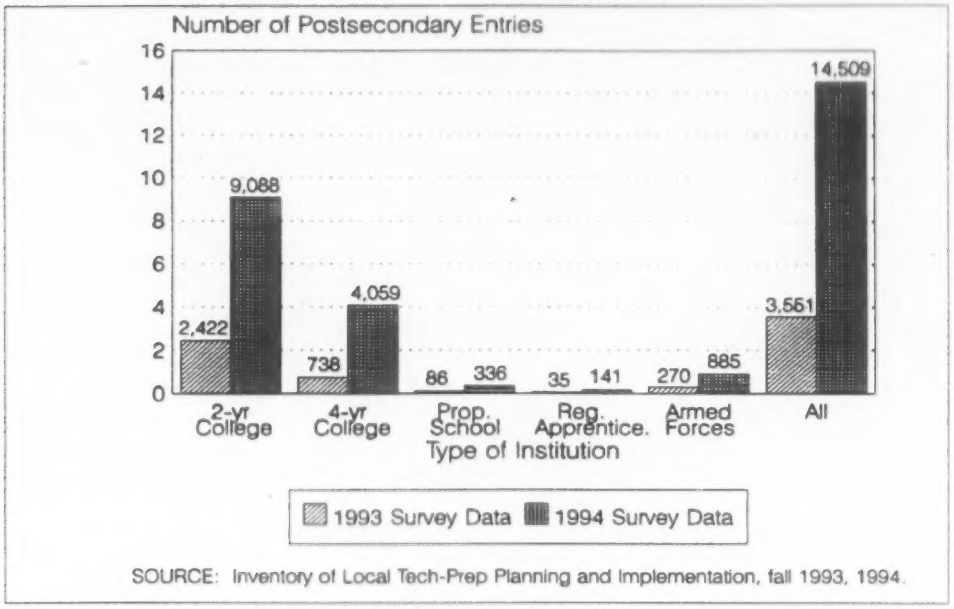
FIGURE IV.8

NUMBER OF TECH-PREP HIGH SCHOOL GRADUATES ENTERING POSTSECONDARY EDUCATION OR TRAINING IN FALL 1993 AND FALL 1994, BY TYPE OF INSTITUTION



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994.

Four-year institutions have become a more frequent choice for Tech-Prep students who pursue postsecondary education

Although the majority of Tech-Prep postsecondary students are enrolled at community or technical colleges, more reportedly chose to enter four-year colleges or universities in 1994 than in 1993 (Figure IV.8). The number of students identified as Tech-Prep graduates who reportedly began a four-year program increased substantially between fall 1993 and fall 1994. Moreover, the proportion of Tech-Prep postsecondary students who were entering four-year institutions increased--from 21 percent in 1993 to 28 percent in 1994.

Tech-Prep students continue to enter postsecondary articulated occupational programs at high rates

Tech-Prep community college students enroll in articulated occupational programs more often than in general academic transfer programs. In both 1993 and 1994, about 80 percent of consortia with students attending community colleges reported that students entered articulated postsecondary specialties that fall (Figure IV.1). In 1994, 105 consortia were able to report the number of Tech-Prep students in these programs. The reported 6,042 students represent 76 percent of Tech-Prep students attending community colleges in those 105 consortia. About 80 percent of 1993 community college students entered articulated specialty programs.

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Given that Tech-Prep initiatives are still relatively new, it is not surprising that only a few consortia were able to document students' completion of postsecondary occupational programs. Eleven consortia had begun graduating Tech-Prep students by spring 1993 and reported that Tech-Prep students completed articulated postsecondary programs in spring 1994. A total of 219 students from these 11 consortia received postsecondary degrees or certificates.

Consortia report that higher proportions of Tech-Prep high school graduates hold jobs

In both 1993 and 1994, the capacity to track information about the employment of high school graduates was extremely limited. However, 71 of the 238 consortia with graduates in spring 1994 reported that some students obtained full-time or part-time employment after high school. They reported a total of 4,969 students in these jobs, or about one-third of the reported Tech-Prep high school graduates in those 71 consortia. In contrast, only about 22 percent of high school graduates in reporting consortia were employed in 1993. These differences should be interpreted cautiously, however, because consortia are reporting these outcomes for only a limited number of their districts.

Employment after completion of postsecondary programs is not widely reported

Very few consortia were able to report in either 1993 or 1994 on Tech-Prep students' employment after completion of a postsecondary program. Seven consortia were able to report on the number of students employed after postsecondary degree attainment in 1994, compared to 5 consortia in 1993 (Figure IV.1). Only a small number of consortia have been implementing Tech-Prep long enough for identifiable participants to have completed a secondary and postsecondary sequence. In addition, consortium staff are likely to have even greater difficulty tracking employment after postsecondary completion than after high school graduation.

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